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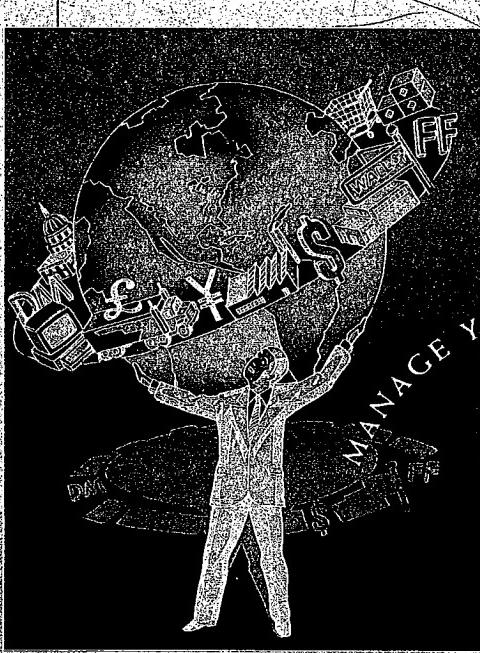
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# RHYTHM® SUPPLY CHAIN PLANNER STANDARD REPORTS MANUAL



The Intelligent Solution for  
Global Supply Chain Management

*i*  
i2 Technologies

# Rhythm® Supply Chain Planner Standard Reports Manual

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*Tables*

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**Section 1**

# Introduction

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## 1.1 Introduction

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This section describes the library of standard reports (windows) that is supplied with the *Rhythm* graphical user interface (GUI). This library was designed to ensure consistency and easy customization of elements throughout the entire set of reports. It provides users with a starting point for planning and scheduling their manufacturing system. These reports function as a graphical interface to the data that is present in the set of user data files. These data files are communicated to the standard reports (and to user defined reports) through the set of models that are described in detail in the *Rhythm Model Reference*.

## 1.2 Purpose

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The purpose of the *Rhythm* Standard Reports is to:

- provide users with a starting point for planning and scheduling their particular manufacturing system
- get users up and running quicker as they begin to design additional reports to fine tune *Rhythm* for their specific manufacturing environment
- display the *User* editor, which allows users to design worksheets, layouts, and reports

## 1.3 FLO Network

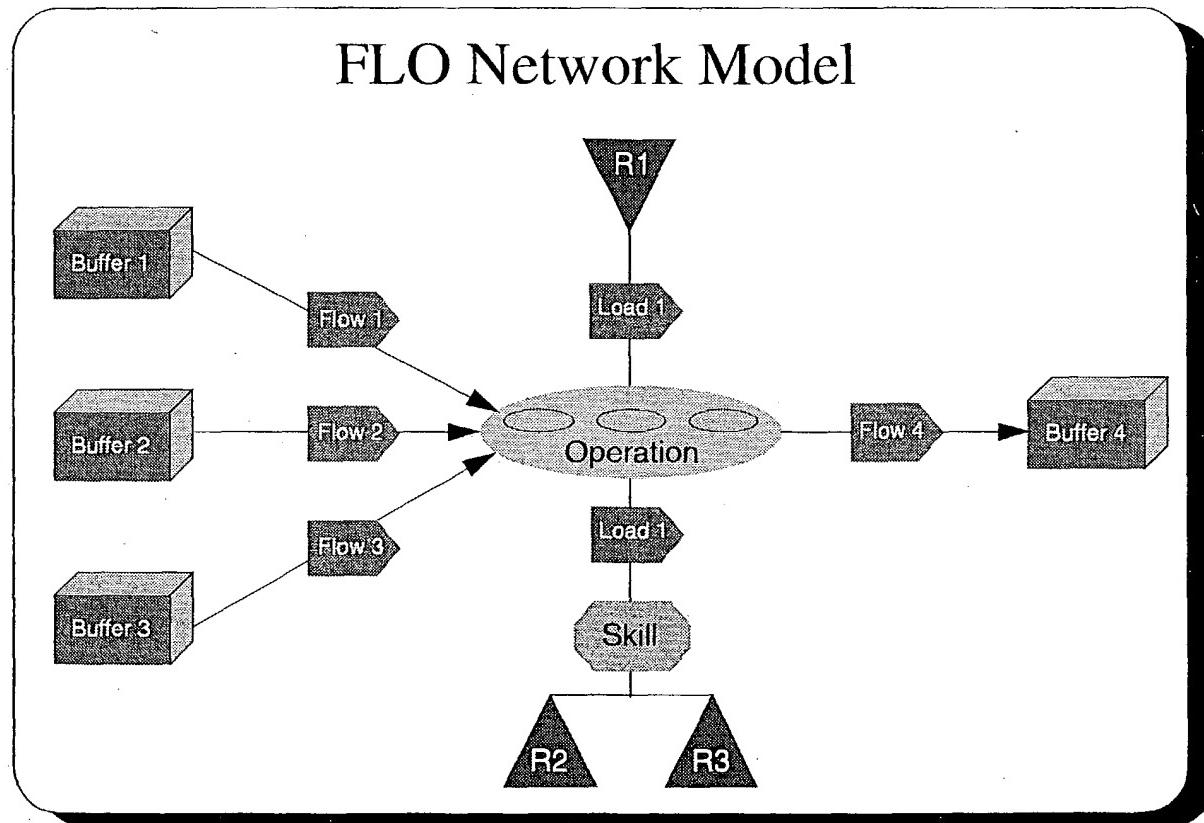
### 1.3.1 Introduction

The FLO network forms the network of Flows, Loads, and Operations within a given site. It defines the flow of material through the factory. Each element in this figure represents a model in the *Rhythm Model Reference Manual*. See this manual for additional details.

The functions of some of the standard reports described in this manual are better understood by looking at FIGURE 1. This figure has been modified and added to the descriptions for Buffer, Flow, Load, Operation, Resource, and Skill.

FIGURE 1

FLO Network Model



Factories could have different types of flows such as:

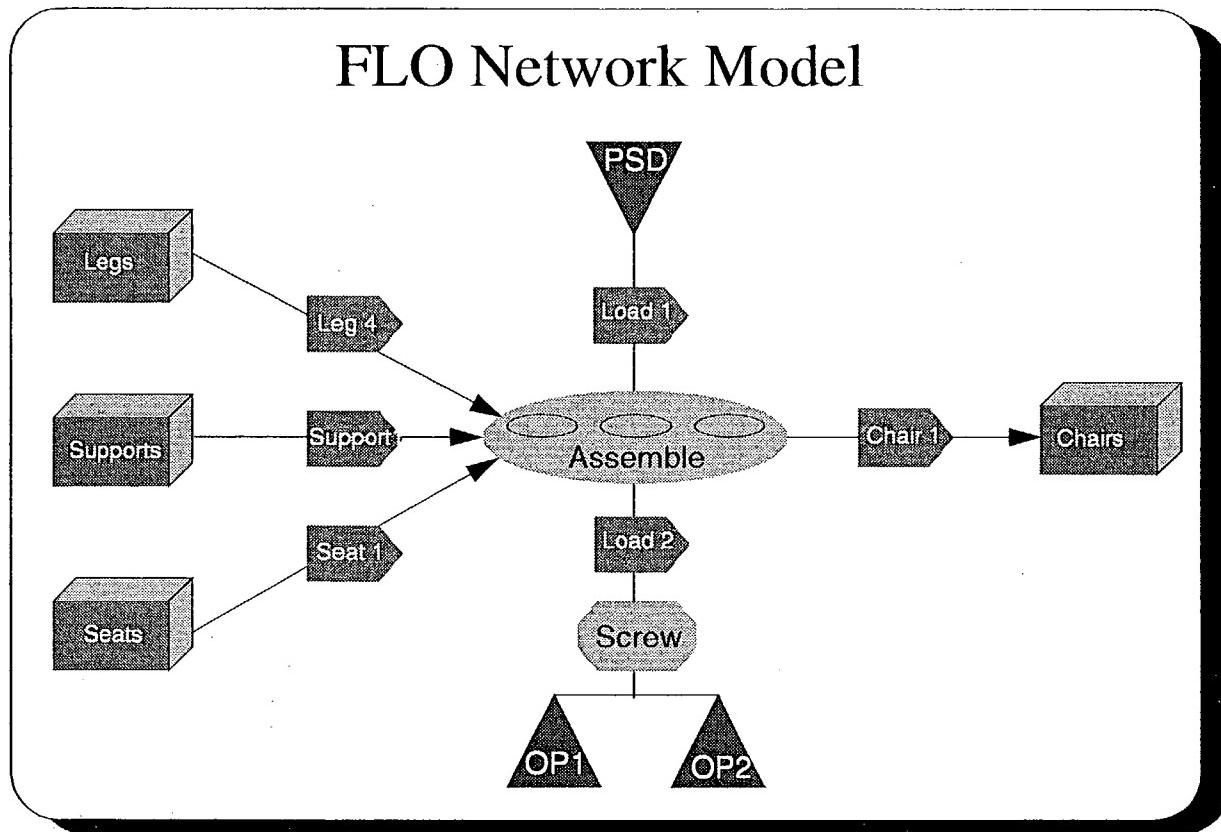
- straight line
- assembly

- disassembly
- combinations of each of these flows

Planning becomes more difficult as the complexity of the FLO network increases. See FIGURE 2 for a relatively simple planning scenario. Note the elements of FIGURE 1 to which the elements of FIGURE 2 apply.

FIGURE 2

FLO Network Model - Chair



### 1.3.2 Operation Model

The operation models the value adding activity. It consumes one or more input items and produces one or more output items. The connecting arc between the buffer and operation is flow. The connecting arc between the skill or resource and the operation is load.

### 1.3.3 Buffer Model

The buffer models management of material. Each buffer manages the flow of one item. Buffer uses a Flow\_Policy extension to implement material planning rules. Buffer has supplying, storage, receiving, and picking operations.

### 1.3.4 Flow Model

The flow models how material is used by the operation. It connects buffer to operation, whether flowing from the buffer into the operation or flowing out of the operation into the buffer. The Flow\_Policy that is defined is a buffer extension.

Flow has an extension named Usage\_Policy. The flow defines how an operation consumes or produces an item through this extension. Example Usage\_Policy extensions include:

- Consume\_per
- Produce\_per
- Consumed\_fixed
- Produced\_fixed
- Produced\_Yield

### 1.3.5 Resource Model

Resource models the capacity to perform operations. Each resource has a skill group. Examples of resources include:

- machine
- tool
- fixture
- trucks
- operators

A resource has extensions such as:

- Load\_Policy
- Efficiency
- Maintenance - defines how maintenance is specified for a given resource.
- Size - defines the size limits on the loads that can be placed on a resource.
- Variability - models the uncertainties and creates pads before and after the operation performed at this resource.

Resource also has operations such as:

- transit\_operation
- skill\_operation
- setup\_operation

### **1.3.6 Load Model**

Load model connects skills or resource to an operation. Usage\_Policy is an extension of load which defines how a given operation uses the skilled resource specified by the load. Operations can have multiple loads. They model simultaneous skilled resources.

The Load\_Policy that is defined is a resource extension.

### **1.3.7 Skill Model**

Skill models a capability needed to perform an operation. Each skill has a list of resources which have that skill. Each resource has a different efficiency in performing a certain skill. Skill allows the modeling of alternate resources. Skill has an extension called *selection*. It implements the rules for an alternate resource selection.

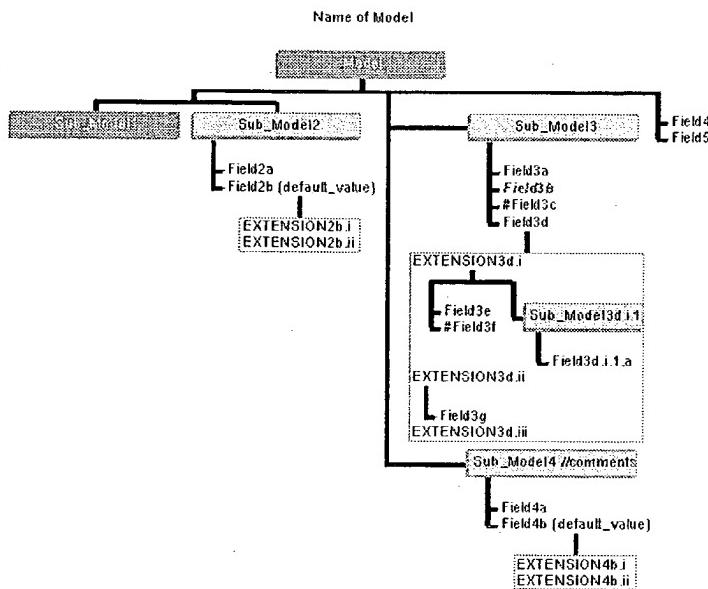
## 1.4 Rhythm SCP Model Structure Tree

### 1.4.1 Description

The Rhythm Supply Chain Planner (SCP) model structure tree illustrates the relationship between each model presented in this manual. Reviewing and understanding this structure will help you to navigate through the SCP user interface and the standard reports manual, and will help you establish your plan and build your supply chain. FIGURE 3 show the template used to illustrate each model. FIGURE 4 shows the legend for each part of the template.

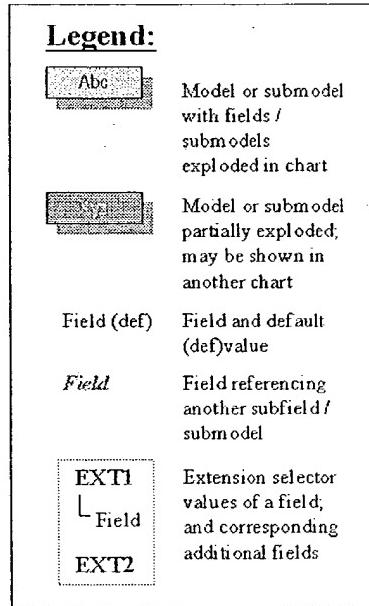
FIGURE 3

Model Structure Tree



**FIGURE 4**

Legend



#### 1.4.2 Guidelines

The following guidelines apply to the structure tree and to the models illustrated by this structure:

- The structure tree only shows user configured fields and not export-only fields. It is intended to facilitate the development of models and Object Interaction Language (OIL) scripts. The structure is based on the Rhythm Model Reference Manual and the Rhythm Supply Chain Planner (SCP) training.
- Names of models / fields in the charts are shown in word caps and in singular form. However, when referencing them in OIL, use small caps only. Models or submodel names should be in plural form, while fields in singular. Extension selector values are in full caps.
- Fields without a # sign are the typical minimal set of fields necessary to create a base model where fields with a preceding #sign may be left defaulted.
- Not all default values are shown in the charts.
- Charts for Site, Seller, Plan, and Strategy are provided in this document. Simplified charts for Site and Plan are also provided where only key fields and extension selectors are shown.

#### 1.4.3 Model Structures

FIGURE 5 shows the relationship between the Site model and the Supply Chain, Seller, and Plan models. FIGURE 6 shows the same structure but only with the key fields and extension selectors.

## **FIGURE 5**

## Site Model

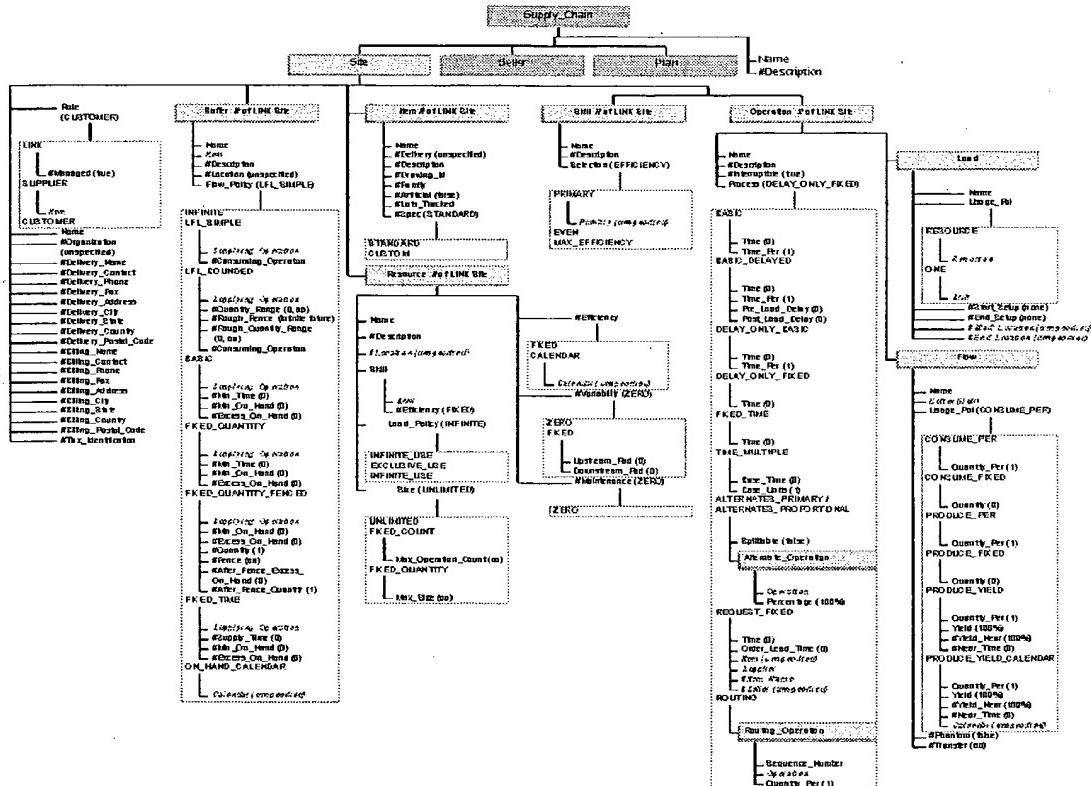


FIGURE 6

Site Model - Key Fields

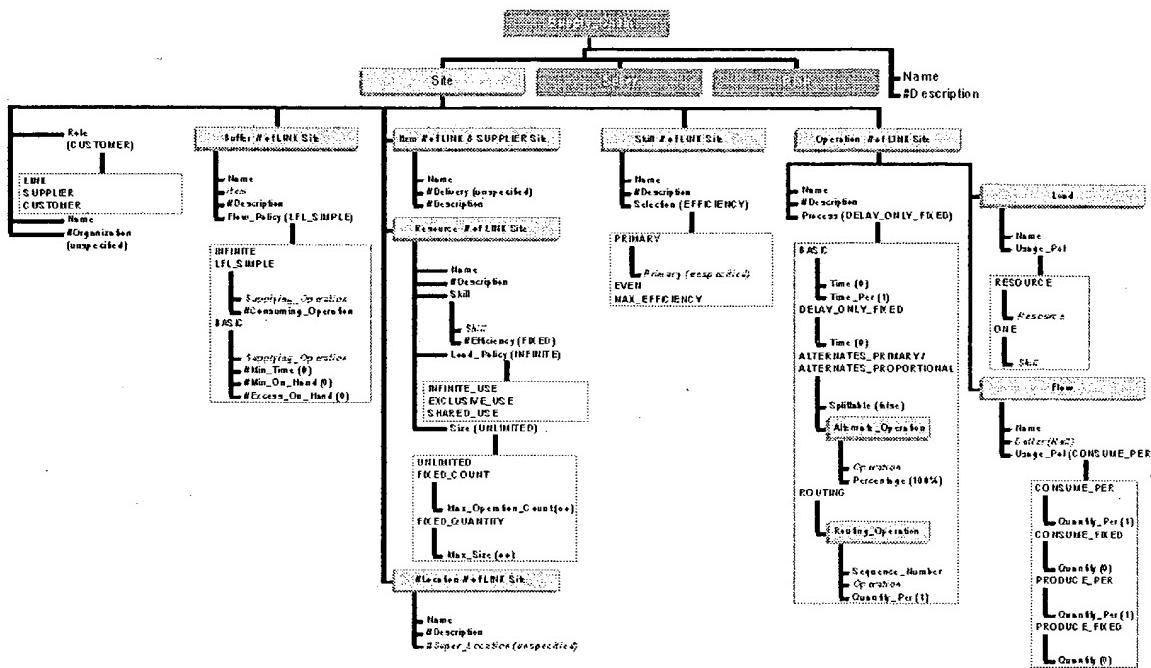


FIGURE 7 shows the relationship between the Seller model and the Supply Chain, Site, and Plan models.

FIGURE 7

Seller Model

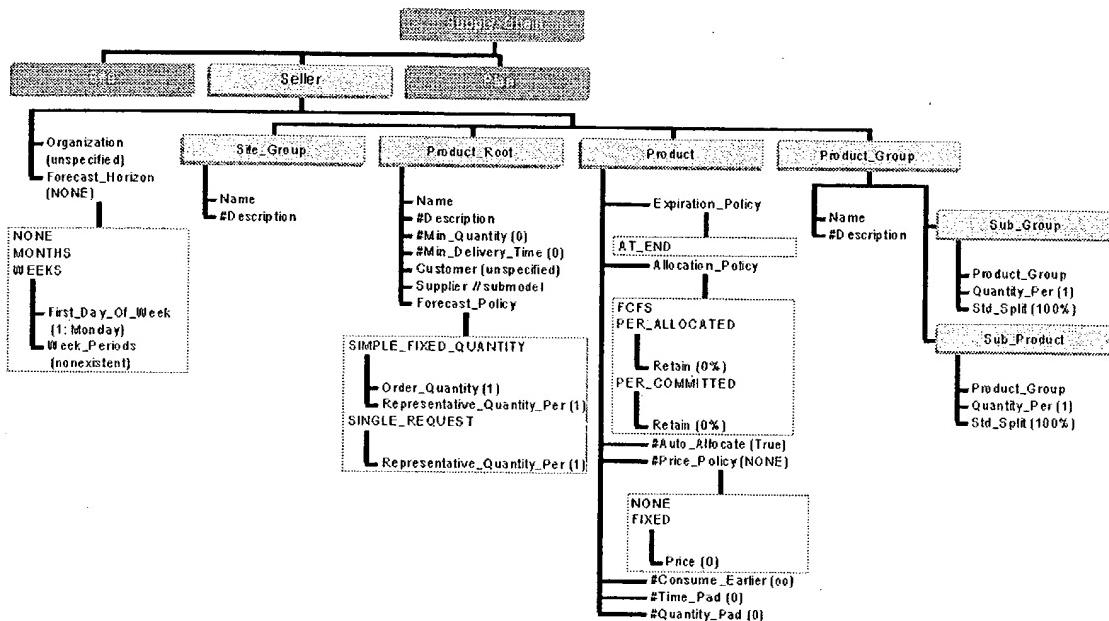


FIGURE 8 shows the relationship between the Plan model and the Supply Chain, Seller, and Site models. FIGURE 8 shows the same structure but only with the key fields and extension selectors.

## FIGURE 8-

## Plan Model

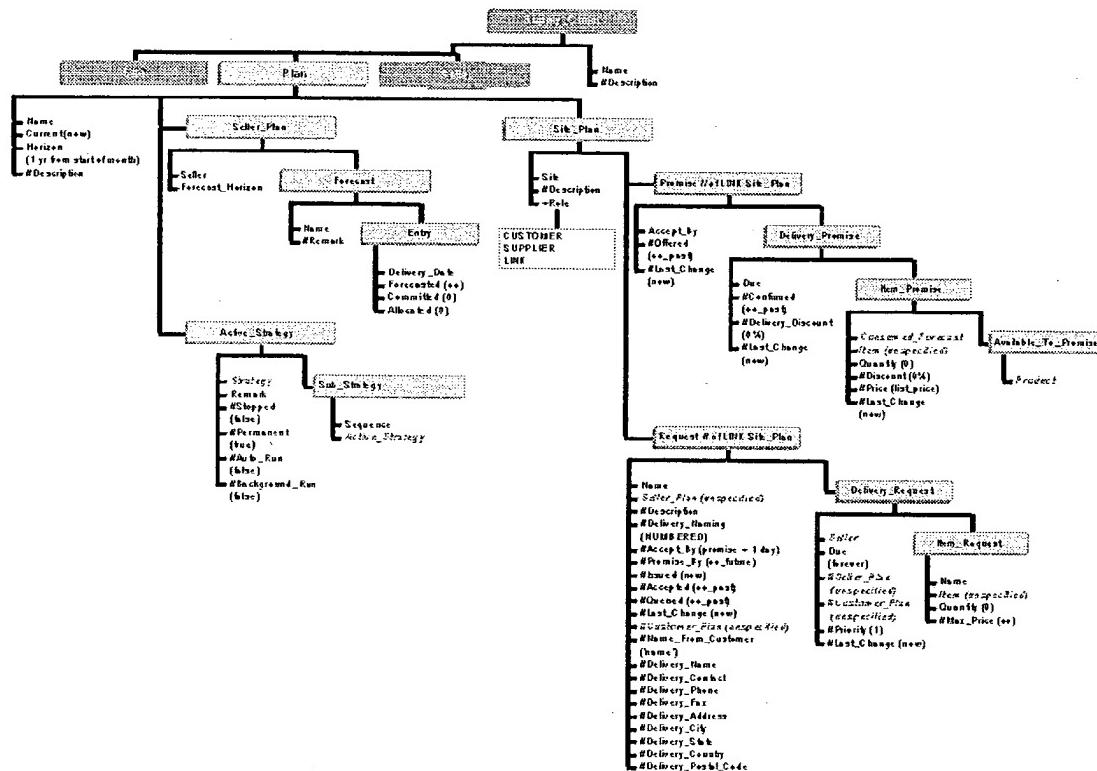


FIGURE 9

Plan Model - Key Fields

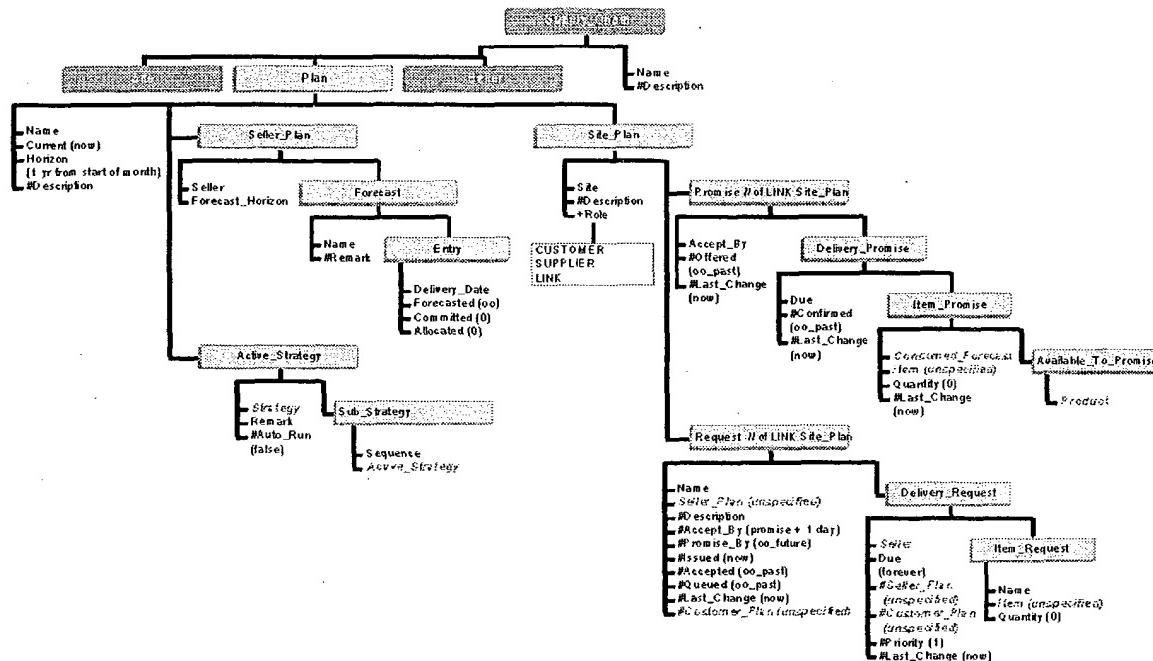


FIGURE 10 shows the relationship between the Strategy model and the Problem\_Set, Change, Goal, and Sub-Strategy models.

FIGURE 10

## Strategy Model

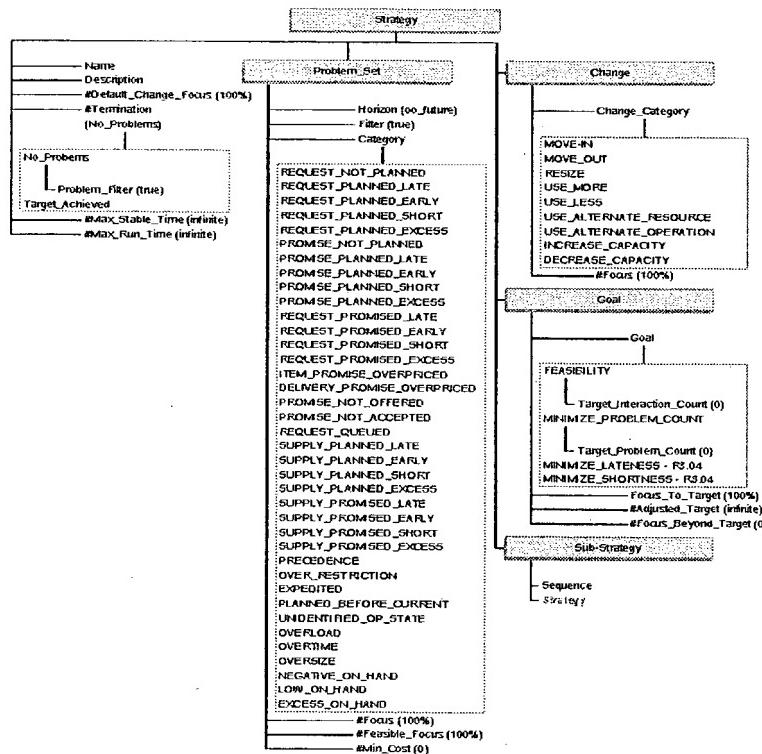
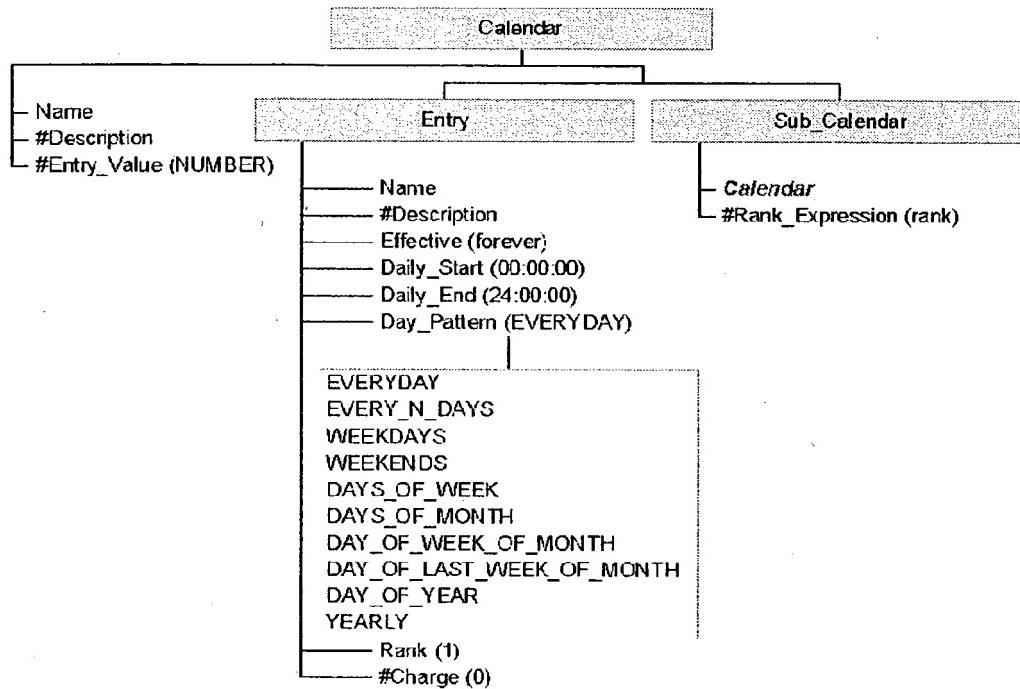


FIGURE 11 shows the relationship between the Calendar, Sub\_Calendar, and Calendar Entry models.

FIGURE 11

Calendar Model



## **1.5 Terms**

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The following is an alphabetical list of terms that may be unfamiliar to the reader. These terms are included so there is no confusion as to commonly used words as well as a reference to less common words.

### **1.5.1 Click**

Clicking involves rapidly pressing and releasing the mouse button. In X Windows environments, the mouse typically has three buttons. If no specific mouse button is referenced, the left button should be used.

Examples of use include: click, click left (same as click), click right, click middle.

A single click inserts the cursor into a cell. A double click then selects the entire cell contents. These cell contents are copied into the selection buffer for pasting into other areas or applications. When the entire cell is selected, any keyboard entries will replace (overwrite) the entire cell contents. To avoid this replacement, single click once again in the cell.

### **1.5.2 Cursor**

Cursor refers to the indicator on the screen which shows where text will be placed when typed. The cursor should not be confused with the pointer. The cursor often is a flashing box. In an editor, the cursor often resembles a capital I.

### **1.5.3 Double Click**

Double clicking involves rapidly pressing and releasing the mouse button twice. In X Windows environments, the mouse typically has three buttons. If no specific mouse button is referred to, use the left button. Normally, this is a shortcut that performs the same action as a click on an item plus a click on a button.

Examples of use: double click, double click left (same as double click), double click middle

### **1.5.4 Drag**

Dragging involves holding down the left mouse button and moving the mouse pointer to a desired end position before releasing the button. One example of use is dragging the pointer across a word. This means, move the mouse to the beginning of the word, press and hold the left mouse button, move the mouse to the end of the word and let go of the left mouse button.

### **1.5.5 Pointer**

Typically, a pointer is the arrow on the screen which tracks mouse movement. The arrow may change to some other iconic shape (e.g., a watch face indicating that the system is busy).

**1.5.6 Popup**

A popup menu is a menu which may be obtained by pressing a mouse button in designated areas of the window. Normally, the left mouse button is pressed and the pointer is dragged to the desired selection in the pop up menu and released. Some pop up menus are obtained with the right mouse button. The use of the right mouse button will be indicated in the text when necessary.

**1.5.7 Pressing**

Pressing involves pushing down and holding down the mouse button. In X Windows environments, the mouse typically has three buttons. If no specific mouse button is referenced, the left button should be used.

**1.5.8 Popdown**

A popdown menu is a menu at the top of a window. The left mouse button is clicked on the menu title causing the menu to appear, and the pointer is dragged to the desired selection and released.

**1.5.9 Triple Click**

Triple click is the same as double click but the mouse button is clicked three times.

**1.5.10 Type**

Type refers to a quick press and release of a keyboard key. Most keys repeat if held down.

## 1.6 Notational Conventions

The following is a list of conventions used throughout this document. Included is a list of special characters and symbols, as well as a list of fonts used to denote special text.

### 1.6.1 Characters

<> Used to denote special keys on the keyboard. For example:

- <enter> Type the enter key. No different from the <return> key.
- <return> Type the <return> key. No different from the <enter> key.
- <tab> The tab key.
- <esc> The escape key.

[ ] Used to denote optional parameters for a command. For example: ls [-l] is interpreted as the ls command with an optional parameter of -l.

*italics* A word in *italics* will, in general, represent a character string that is displayed in a *Rhythm* window. *Italics* are also used to *emphasize* a word in the context of the text, to indicate file names, and to indicate commands being typed for execution (for example, UNIX commands).

### 1.6.2 Symbols

- shift- Hold down the shift key while performing the action after the dash.
- ctrl- Hold down the ctrl key while performing the action after the dash.
- meta- Hold down the meta key while performing the action after the dash.
- alt- Hold down the alt key while performing the action after the dash.

Examples:

shift-a Type capital a. Could be represented as 'A.'

ctrl-<enter> Hold down ctrl and press the <enter> key.

shift-<click> Hold down the shift key and click the left mouse button. (Remember, click by itself means click the left mouse button.)

shift-<right click>

Hold down the shift key and click the right mouse button.

### 1.6.3 Buttons



Report button - select to display a report for the associated name.



Choose button - select to choose a different model from the list of known models of the same type.



Map button - select to show a graph for the associated name.



More button - select to show more information for item.

## 1.7 Standard Menubar Items

The following menubar items are common to many or all standard reports. They are described here once, in lieu of repeating the identical information for each separate standard report.

### 1.7.1 File Menu

The *File* menu presents the following items:

- *Revert* - select any editable cell, change it, and press <Esc> key. The contents of that cell revert to the original string (i.e. the changes are discarded).
- *Save* - save the changes made to the data in the current editor, i.e. for all users, to preserve the look-and-feel and functionality of the design targeted for the reports, layouts, and worksheets.
- *Save As* - save the model that exists at the current moment.
- *Import* - specify the input data (.dat) file pathnames, relative to the specfile directory. Import can only be performed from the *Main* report.
- *Export* - specify the output data (.dat) file pathnames, relative to the specfile directory. Export can only be performed from the *Main* report.
- *Update Report* - update the data in the current editor to preserve the look-and-feel and functionality of the design targeted for the *Rhythm* reports, layouts, and worksheets.
- *Update All Reports* - windows that are not iconified are updated. When a window is un-iconified, the watch cursor is displayed on it, and the window is updated.
- *Freeze Report* - freeze the current report. This allows the frozen report to be compared with the same report after plan changes have been made. From a frozen report, a user may do any of the following:
  - perform a right-click of the mouse for a menu
  - perform the *Copy* function (see *Edit Menu*)
  - perform sorting by title in ascending order (see *Sorting Layouts*)
  - perform sorting by title in descending order (see *Sorting Layouts*)
  - perform the *Find* function (see *Edit Menu*)
  - perform the *Filter* function (see *Sorting Layouts*)
- *Close Report* - exit the current report and clear it from the display.

- *Print Report* - print a copy of the selected layout for this report to the printer. Note: click somewhere in the layout to be printed. The *Print Report* option runs the following action (see the *application.rpt* file):

```
action: print_layout =
    do(setenv("I2_PRINTFILE", "/tmp/print." & getenv("I2_PID")),
print_layout(getenv("I2_PRINTFILE"));
system(getenv("I2_PRINT") ? "lpr $I2_PRINTFILE",
system("rm -f $I2_PRINTFILE"));
```

This saves the layout (not the report) that has input focus. (Be sure to select the layout to be printed before using the *Print Report* option, so that the layout has input focus.) The default is to use the UNIX print command *lpr* to do the printing. If the host uses something other than *lpr*, then the *I2\_PRINT* environment variable needs to be customized. The value of *I2\_PRINT* can be any shell command. One of the easiest ways to set *I2\_PRINT* is in the *scp\_ui.opt* file. For example,

```
initialize: do(display_report("main"),
setenv("I2_PRINT", "a2ps -F5.75 -ns -f $I2_PRINTFILE | lpr -h"))
```

Note that someplace in the shell command, a reference to *\$I2\_PRINTFILE*, which is the temporary file that contains the ASCII text being printed, should be made.

- *Print Report to File* - print a copy of the selected layout for this report to a user specified file. Note: click somewhere in the layout to be printed.

The *echo(String)* statement prints a string to a standard output. Strings can be printed to a specific file.

- If the *echo* statement is part of a *ui\_batch* file, then try the following in a UNIX prompt:

```
run_ui_batch 2 > & echo.out (redirect the output to echo.out)
```

where *run\_ui\_batch* is a one line script which has something like the following:

```
scp_ui -batch_wait 'do_file("print_info.batch")' -port xxxx
```

*print\_info.batch* is the batch file, and *xxxx* is the *scp\_engine* port.

- Write an export (.exp) file and export the data you want.

- *Exit* - displays the *Exit Dialog*, which provides two options:

- *Shutdown GUI only* - exit the user interface, clear all windows from the display, and end the client executable

- *Shutdown GUI and Engine* - exit the user interface, clear all windows from the display, end the client executable, and end the server executable.

### 1.7.2 Edit Menu

The *Help* menu presents the following items:

- *Undo* - revert any cut, copy, or paste back to its original state.
- *Undo To* - takes you back to the last checkpoint (the last checkpoint that you created using the *Set Checkpoint* feature).
- *Set Checkpoint* - see *Undo To*.
- *Cut* - remove the selected data from the client area and move it to the clipboard.
- *Copy* - copy the selected data to the clipboard without removing the data from the client area.
- *Paste* - paste or add the contents of the clipboard to the client area at the selected location.
- *Find in Row* - do incremental string search starting from the current focus and search the rest of the row. Searches in either the selected row, or if none is selected, the first row in the report. To select a row, just click anywhere in the desired row before selecting *Find in Row*.
- *Find in Column* - do incremental string search starting from the current focus and search the rest of the column. Searches in either the selected column, or if none is selected, the first column in the report. To select a column, just click anywhere in the desired column before selecting *Find in Column*.
- *Find* - do incremental string search starting from the current focus and search the rest of the table. Searches the entire report.
- *Report* - display the *Report Editor*.
- *Layout* - display the *Layout Editor*.
- *Worksheet* - display the *Worksheet Editor*.
- *Control* - display the *Control Editor*.
- *Read Changed OIL Files*
- *User* - display the *User* report, which serves as a high level window for the creation of new, and the display of existing, worksheets, layouts, and reports.
- *Specfiles* - opens *Specfile List Editor*.

### 1.7.3 Model Menu

The *Model* menu presents the following items (these items may also be accessed from a popdown menu that is displayed by pressing and holding the right mouse button in a cell):

- *Cut*
- *Copy* - copy the instance of the selected model to a new instance of that model.
- *Paste*
- *Modify*
- *Editor* - display the editor for the selected model.
- *Choose* - find the instance of a particular model.
- *Help* - display help information about the selected model.
- *New* - display a dialog for creating a new instance of the selected model.

- *Delete* - display a dialog to delete an instance of a model.
- *Model Types* - display a list of all model types that are available. See the Rhythm Model Reference Manual for additional details on each model.

#### 1.7.4 Help Menu

The *Help* menu presents the following items:

- *Manuals* - allows a user to select an online manual to view for more detailed information on a particular topic.
- *Engine Status* - displays the following information for each currently executing command:
  - Engine Activity* - command name. This shows the queue of commands, sorted by priority and sequence (execution order).
  - User* - the name of the user executing the command.
  - Done* - the progress of the command (percent done).
  - Priority* - the rank of the command. This is used for sorting the list of currently executing commands.
  - Real Time* - the amount of time taken to execute the command.
  - CPU Time* - the amount of CPU time used to execute the command.
- *On Value* - allows a user to select an object in a window and obtain more detailed information on that object.
- *On Control* - allows a user to select a control in a window and obtain more detailed information on that control.
- *On Layout* - allows a user to select a layout in a window and obtain more detailed information on that layout.
- *On Report* - allows a user to select a report in a window and obtain more detailed information on that report.
- *On Help* - allows a user to obtain more detailed information on the help facility.
- *On Version* - provides the version and date information for the engine executable.

#### 1.7.5 Sorting Layouts

Sorting of layouts can be specified by right clicking on the title of the column on which the user wants to sort. A popup menu of options is displayed:

- *Sort Ascending* - Clear previous sorts and sort this column in ascending order.
- *Sort Descending* - Clear previous sorts and sort this column in descending order.
- *Find* - Display the *Search Dialog*.
- *Filter* - provides a way to filter layout contents from the GUI without needing to edit reports, and without needing specialized knowledge about models and fields.
- *Hide* - Hide this column.
- *Help* - Display help information for the field in this column.

## 1.8 Toolbar

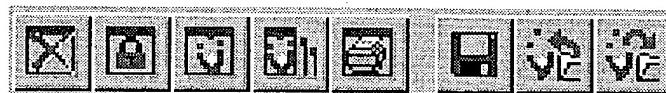
### 1.8.1 Toolbars

Toolbars are displayed immediately beneath the menubar for some reports. These toolbars provide icons (buttons) that perform utility functions. There are three toolbars: basic, global, and plan. Each toolbar consists of sets of related tools. FIGURE 15 through FIGURE 17 detail each set and each tool within each set.

The basic toolbar (See FIGURE 12) is only displayed with the Main report (note that it supplies the first nine icons for the global and plan toolbars):

**FIGURE 12**

Basic Toolbar

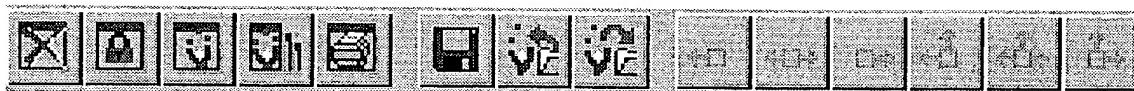


The global toolbar (See FIGURE 13) is displayed with the following reports (note that the first nine icons are the basic toolbar):

- *Supply Chain Editor*
- *Calendar Editor*

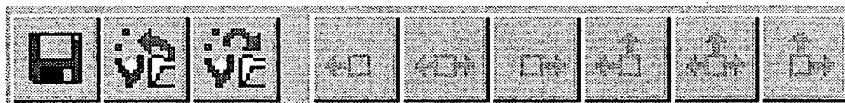
**FIGURE 13**

Global Toolbar



The plan toolbar (See FIGURE 14) is displayed with all other plan, editor, and summary reports (note that the first three icons are in the basic toolbar):

---

**FIGURE 14****Plan Toolbar**

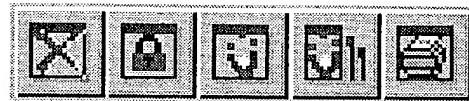
### 1.8.2 Tools

Each toolbar consists of sets of related tools. FIGURE 15 through FIGURE 17 detail each set and each tool within each set. Each figure contains the callout that is displayed for a tool icon when the cursor is briefly left on an icon.

Reports must be periodically saved to preserve changes made, or closed when the user has completed all changes or no longer wishes to make changes to a displayed report. The report management tools (See FIGURE 15) may be used to close a report, freeze a report (no changes can be made), update a report to preserve changes made to it, or update all reports to preserve changes made to all reports, and print reports.

**FIGURE 15**

Report Management Tools

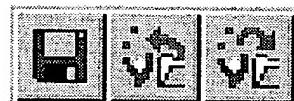


Close Report   Freeze Report   Update Report   Update All Reports   Print Report

Data (.dat) files, with pathnames relative to the import file directory, can be imported and exported only from the *Main* report. The import / export tools (See FIGURE 16) may be used to expedite the processes of saving a model, importing external data, and exporting data.

**FIGURE 16**

Import / Export Tools



Save Rhythm Model   Import External Data   Export Data

When a load bar is selected in a plan (e.g. *Resource Plan, Forecast Editor*), the planning tools (See FIGURE 17) may be used to balance the load in the bucket with the available capacity. When a problem bar is selected in a plan, the planning tools may be used to resolve the problems.

---

**FIGURE 17****Planning Tools**

|                 |                                |               |                              |                                      |                            |
|-----------------|--------------------------------|---------------|------------------------------|--------------------------------------|----------------------------|
| Move<br>Earlier | Move<br>Earlier<br>or<br>Later | Move<br>Later | Move<br>Earlier<br>or<br>Off | Move<br>Earlier,<br>Later,<br>or Off | Move<br>Later<br>or<br>Off |
|-----------------|--------------------------------|---------------|------------------------------|--------------------------------------|----------------------------|

**Section 2**

# Basic Reports

---

## **2.1 Introduction**

---

This section contains the library of basic reports that form the foundation of all *Rhythm* products. Basic reports, such as the *Main* window and *User* report, provide starting points into each *Rhythm* product. Utility reports, such as *Delete* and *Save As*, provide some of the basic screenware functions.

## 2.2 Report Names

---

Table 1 lists all basic reports that are available in the *Rhythm* user interface.

The *Report Name* is the title that is displayed at the top of a report. The <angle brackets> indicate characters that are variable. The characters in <angle brackets> indicate the type of object for which the report displays information.

The *Item* is the name of the menu item that is selected from the *Parent Menu* to display the report having a title of *Report Name*.

**Table 1: Report Names**

| Report Name   | Parent Menu | Item             |
|---------------|-------------|------------------|
| Checkpoint    | Edit        | Set Checkpoint   |
| Choose        | Model       | Choose           |
| Confirmation  | File        | Quit GUI         |
| Delete        | Model       | Delete           |
| Engine Status | Help        | Engine Status    |
| File Dialog   | File        | Save As          |
| Filter        |             | Filter           |
| Find          |             | Find             |
| Main          | none        | none             |
| Model Types   | Model       | Model Types      |
| Modify        | Model       | Modify           |
| Rhythm Users  | Main report | All Users button |
| Save As       | File        | Import           |
| Search Dialog | File        | Find             |
| Undo          | Edit        | Undo To          |
| User          | Edit        | User             |

## 2.3 Choose

---

### 2.3.1 Introduction

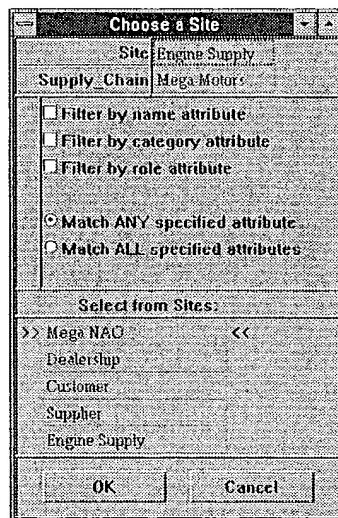
The *Choose* report lists all models of the same model type and of the same parent model according to a filtering search using filters specifically designed for the particular model. The search can be refined and redone interactively. Choosing a model from the list copies it back to the cell from which the report was invoked.

The purpose of the *Choose* report is to enable a user to find a certain item, such as a plan, from the enormous content of plans a model may contain. This search is accomplished by using the filters to locate items (a plan) that meet the specified criteria. FIGURE 18 shows an example of a *Choose* report for Seller Plans.

---

**FIGURE 18**

Choose



### 2.3.2 Displaying a Choose Report

To display a *Choose* report, use the following steps:

**Table 2: Steps for Displaying Choose**

| Step | Action  |
|------|---|
| 1    | Select the plan of interest from the <i>Main Explorer</i> report.   |
| 2    | Select a domain from the list of <i>Domains</i> (such as <i>Sellers</i> ).  |
| 3    | Select a report (or activity) from the list of <i>Reports/Activities for Plans</i> (such as <i>Seller Plan</i> ).   |
| 4    | Click <i>Display Report</i> . The selected report displays (such as the <i>Seller Plan Editor</i> )   |
| 5    | From a report (such as the <i>Seller Plan Editor</i> ), select the <i>Choose</i> button next to current model or the <i>Choose</i> option from the <i>Model</i> menu. |

### 2.3.3 Using the Choose Report

To use the *Choose* report, use the following steps:

**Table 3: Using Choose**

| Step | Action  |
|------|---|
| 1    | Display the <i>Choose</i> report.   |
| 2    | Select the desired filters from the list of specified filters. (For example, in FIGURE 18 the user could select a filter such as <i>Filter by category attribute</i> .)   |
| 3    | Select the desired advanced filter. (For example, in FIGURE 18 the user could select an advanced filter such as <i>Match ANY specified attribute</i> .)   |
| 4    | Click <i>OK</i> .   |
| 5    | Once a list of items (such as plans) is displayed that meets the user's filtering requirements, select an item from the list. (For example, in FIGURE 18 the user could select an item such as <i>Northern Sales</i> .) |
| 6    | Click <i>OK</i> . The report for that item displays.  |

### 2.3.3.1 Filters

Table 4 lists the filter available and a provides a description of each.

**Table 4: Filters and Advance Filters**

| Filter                         | Description   |
|--------------------------------|---|
| by name attribute              | This filter lists all items with the same name.   |
| by category attribute          | This filter lists all items within the same category.   |
| by organization attribute      | This filter lists all items within the same organization.   |
| by role attribute              | This filter lists all items having the same role.   |
| by product attribute           | This filter lists all items having the same products.   |
| by suppliers attribute         | This filter lists all items having the same suppliers.  |
| by customers attribute         | This filter lists all items having the same customers.  |
| by forecast policy attribute   | This filter lists all items having the same forecast policies.  |
| by location attribute          | This filter lists all items having the same location.   |
| by flow policy attribute       | This filter lists all items having the same flow policies.  |
| Match ANY specified attribute  | This filter extracts (from the list provided by the above filters) a list of all items having <i>any</i> of the specified attributes. |
| Match ALL specified attributes | This filter extracts (from the list provided by the above filters) a list of all items having <i>all</i> of the specified attributes. |

## 2.4 Confirmation

The *Confirmation* dialog allows you to respond to a question with *OK* or *Cancel*.

One example of this dialog is displayed for confirmation of a shutdown request.

Before you shutdown, decide what processes you want to end:

- Just your client (GUI)
- All clients and the engine

Select *Exit* from the *File* menu in any window (or select *Close Report* from the *File* menu in the main report).

To shutdown just your client (GUI):

The *Exit Dialog* displays. (See FIGURE 19.)

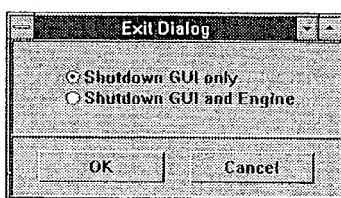
Click on *Shutdown GUI only*, then click on *OK*. In a multi-user situation, you normally want to terminate your client but leave the engine running.

To shutdown all clients (GUIs) and the Engine:

Click on *Shutdown GUI and Engine*, then click on *OK*. The engine and all clients connected to this engine, including your own client, are shutdown.

**FIGURE 19**

Exit Dialog



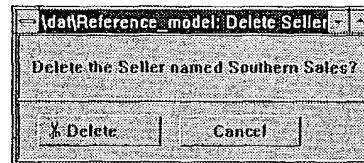
---

## 2.5 Delete

---

The *Delete* menu item in the *Model* menu displays a dialog to delete an instance of a model. See FIGURE 20.

---

**FIGURE 20****Delete**

## 2.6 Engine Status

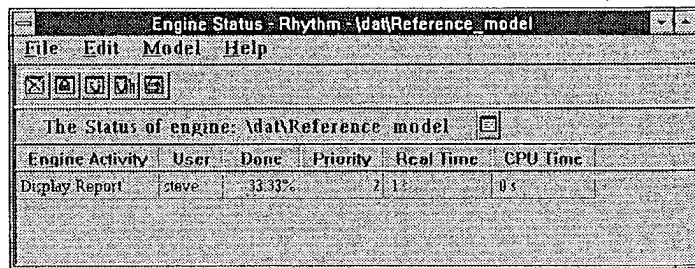
The *Engine Status* menu item in the *Help* menu displays the following information for each currently executing command (See FIGURE 21):

- *Engine Activity* - command name. This shows the queue of commands, sorted by priority and sequence (execution order).
- *User* - the name of the user executing the command.
- *Done* - the progress of the command (percent done).
- *Priority* - the rank of the command. This is used for sorting the list of currently executing commands.
- *Real Time* - the amount of time taken to execute the command.
- *CPU Time* - the amount of CPU time used to execute the command.

Commands with nonexistent (blank) percent done and times are queued (not running).

FIGURE 21

Engine Status



The cursor changes to an hourglass when the user interface is waiting for a response. For example, when updating a report or opening a report, the cursor goes to an hourglass until the report is updated or opened. It does not go to an hourglass just because the engine is doing something. The engine may take a long time to do that, and may be doing things for many other users. Cursor changes are for activities that are expected to be quick, but for some reason take longer.

The *File / Import* menu item in the *Main* report restores the last model that was saved.

## 2.7 Filter Dialog

### 2.7.1 Description

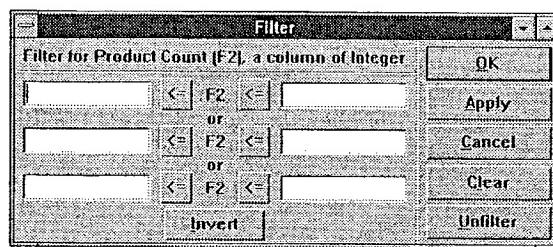
The *Filter Dialog* provides a way to filter layout contents from the GUI without needing to edit reports, and without needing specialized knowledge about models and fields. Filtering occurs on a per row or per column basis. The filter applies only to the current layout.

### 2.7.2 Accessing the Filter Dialog

To display the *Filter Dialog* (See FIGURE 22), press and hold the right mouse button on a title cell in a layout, then drag to the *Filter* option. Filters specified in this way are executed on the GUI.

**FIGURE 22**

Filter Dialog - Numeric



### 2.7.5 Operator Buttons in the Filter Dialog

There are buttons on the *Filter Dialog* that serve as operators to indicate relationships between cell values. These buttons, when selected, toggle to alternate operators. Table 7 specifies the alternate for each operator and the descriptions for all operators.

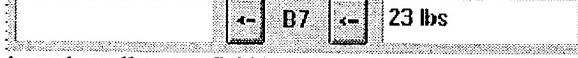
**Table 7: Operator Buttons**

| Button Operator | Description              | Alternate (Toggled) Button | Description              |
|-----------------|--------------------------|----------------------------|--------------------------|
| >               | greater than             | $\geq$                     | greater than or equal to |
| $\geq$          | greater than or equal to | >                          | greater than             |
| $\leq$          | less than or equal to    | <                          | less than                |
| <               | less than                | $\leq$                     | less than or equal to    |
| $\equiv$        | equal to                 | $\neq$                     | not equal to             |

### 2.7.6 Filter Types

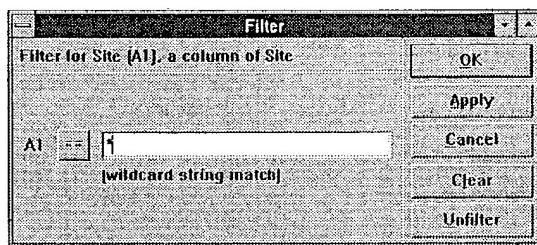
Table 8 describes the types of filters (and so, types of *Filter Dialogs*), based on the cell data type:

**Table 8: Filter Types**

| Filter         | Usage  |      |        |   |   |   |   |   |                       |
|----------------|--|------|--------|---|---|---|---|---|-----------------------|
| Date_Range     | <p>To filter based on date range, follow the steps in the table below:</p> <table border="1"> <thead> <tr> <th>Step</th><th>Action</th></tr> </thead> <tbody> <tr> <td>1</td><td>Specify date range.</td></tr> <tr> <td>2</td><td>Select one of the following from the combo_popup that is displayed (See FIGURE 23):           <ul style="list-style-type: none"> <li>• IS WITHIN - list only those cells that are a subset of the user-specified range.</li> <li>• IS WITHOUT - list only those cells totally outside the user-specified range.</li> <li>• INTERSECTS - list only those cells that overlap the user-specified range.</li> </ul> </td></tr> <tr> <td>3</td><td>Select <i>Apply</i>.</td></tr> </tbody> </table> | Step | Action | 1 | Specify date range.   | 2 | Select one of the following from the combo_popup that is displayed (See FIGURE 23): <ul style="list-style-type: none"> <li>• IS WITHIN - list only those cells that are a subset of the user-specified range.</li> <li>• IS WITHOUT - list only those cells totally outside the user-specified range.</li> <li>• INTERSECTS - list only those cells that overlap the user-specified range.</li> </ul> | 3 | Select <i>Apply</i> . |
| Step           | Action   |      |        |   |   |   |   |   |                       |
| 1              | Specify date range.  |      |        |   |   |   |   |   |                       |
| 2              | Select one of the following from the combo_popup that is displayed (See FIGURE 23): <ul style="list-style-type: none"> <li>• IS WITHIN - list only those cells that are a subset of the user-specified range.</li> <li>• IS WITHOUT - list only those cells totally outside the user-specified range.</li> <li>• INTERSECTS - list only those cells that overlap the user-specified range.</li> </ul>  |      |        |   |   |   |   |   |                       |
| 3              | Select <i>Apply</i> .  |      |        |   |   |   |   |   |                       |
| Enum           | Specify which enum values are needed.  |      |        |   |   |   |   |   |                       |
| Numeric        | <p>To filter based on date, float, integer, quantity, or time, follow the steps in the table below:</p> <table border="1"> <thead> <tr> <th>Step</th><th>Action</th></tr> </thead> <tbody> <tr> <td>1</td><td>Specify up to three ranges of values. See FIGURE 22.</td></tr> <tr> <td>2</td><td>Select <i>Apply</i>.</td></tr> </tbody> </table> <p>If the first range is displayed as the following:</p>  <p>Then only those rows where the cell_name field has a value less than 23 pounds inclusive are displayed (selecting &lt;= toggles to &lt; to mark inclusive or exclusive).</p>   | Step | Action | 1 | Specify up to three ranges of values. See FIGURE 22.                                  | 2 | Select <i>Apply</i> .   |   |                       |
| Step           | Action   |      |        |   |   |   |   |   |                       |
| 1              | Specify up to three ranges of values. See FIGURE 22.   |      |        |   |   |   |   |   |                       |
| 2              | Select <i>Apply</i> .  |      |        |   |   |   |   |   |                       |
| Quantity_Range | Similar to Date_Range.   |      |        |   |   |   |   |   |                       |
| String         | <p>To filter based on a regular expression, follow the steps in the table below:</p> <table border="1"> <thead> <tr> <th>Step</th><th>Action</th></tr> </thead> <tbody> <tr> <td>1</td><td>Specify a regular expression, or specify '*' (wildcard) if selection does not matter.</td></tr> <tr> <td>2</td><td>Select <i>Apply</i>.</td></tr> </tbody> </table> <p>When using '*', abc* matches abcdef and abcxyz. The button which is displayed as == or != can be selected to toggle between matching the specified string or not matching the specified string, respectively. See FIGURE 24.</p>   | Step | Action | 1 | Specify a regular expression, or specify '*' (wildcard) if selection does not matter. | 2 | Select <i>Apply</i> .   |   |                       |
| Step           | Action   |      |        |   |   |   |   |   |                       |
| 1              | Specify a regular expression, or specify '*' (wildcard) if selection does not matter.  |      |        |   |   |   |   |   |                       |
| 2              | Select <i>Apply</i> .  |      |        |   |   |   |   |   |                       |

**FIGURE 24**

Filter Dialog - String



## 2.8 Find

To find a particular value in a cell of a Rhythm report, use the *Find* option. This can be used to quickly locate required information, without having to scroll through pages of information.

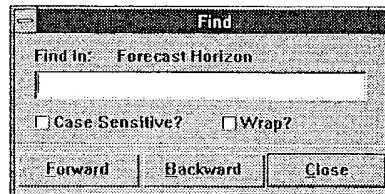
To begin, display the *Find* window. There are two basic ways to do that, depending on where you wish to search.

- Cell title - Move the cursor to the title of the cell to be searched. Click the right mouse button. Select *Find* from the menu.
- Find menu options - On the menubar choose *Edit* to display the *Edit* menu. Select one of the following options.
  - *Find in Row* - searches in either the selected row, or if none is selected, the first row in the report. To select a row, just click anywhere in the desired row before selecting *Find in Row*.
  - *Find in Column* - searches in either the selected column, or if none is selected, the first column in the report. To select a column, just click anywhere in the desired column before selecting *Find in Column*.
  - *Find* - searches the entire report.

The *Find* window is displayed. See FIGURE 25.

FIGURE 25

Find



The sample *Find* window in FIGURE 25 is displayed by clicking the right mouse button while the cursor is in the *Dates* column title of a report. The information to be found, in this case a date, should be entered in the input area below the *Find In* field. As the information is entered, *Rhythm* automatically finds the first instance of that item. Click the *Forward* or *Backward* buttons to continue searching for the item, either forward or backward from the current cell. The system beeps when the item is not found, or when no more instances can be found in the selected direction. Click on *Close* when the search is complete.

*Find* locates only the first occurrence of the specified data in the cell, and is position-independent. For example, if you enter 'plan' as the search data, the search may locate the first 'plan' in *Plan for site in 1997 plan* in one cell as well as 'plan' in *Active plan* in another cell. The find function is intended to find cells which match, not characters or sub-strings within a cell.

### 2.8.1 Find Window Options

There are two options that affect how the *Find* window works. These are described next.

*Case Sensitive?* - Click here if you wish to consider upper or lower case. For example, if you wish to find the word *user*, but only if it starts with an upper case U, then type *User* in the input area, and click the *Case Sensitive* box. If the search is to find *user* only if it begins with a lower case u, type *user* in the input area and click the *Case Sensitive* box. If this box is not selected, the search will find all instances of *user*, regardless of case.

*Wrap?* - Click here if the search is to continue searching through the report after finding all items, and wrap around to the beginning of the report again. If this option is selected, the system never beeps after finding all instances of an item. It just continues to re-find items, even if there is only one instance.

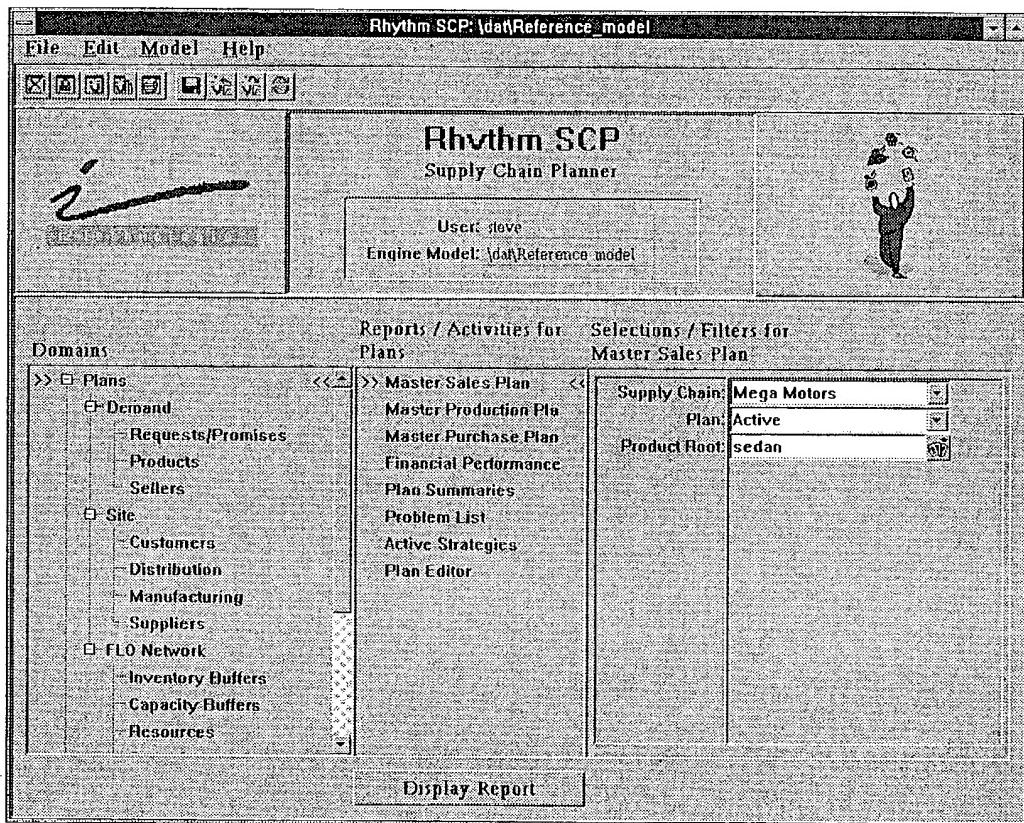
## 2.9 Main

### 2.9.1 Introduction

The *Main* report is displayed upon start up of the *scp\_ui* executable (See FIGURE 26). The *Main* report serves as a starting point for accessing each report in the *Rhythm Supply Chain Planner*.

FIGURE 26

Main Report



### 2.9.2 Displaying the Main Report

To display the *Main* report:

- Run the *scp\_engine* executable.
- Run the *scp\_ui* executable.

### 2.9.3 Using the Main Report

The *Main* report is designed to take users to the reports in which they are interested. It has a hierarchical structure that allows increasingly more specific information to be selected, that leads to the desired report(s).

The *Main* report has three panes, or sections, of information. Each section, moving from left to right, narrows down the choices about which report is selected. When an item is selected in one section, it changes the choices in the section to the right. The three sections of information are as follows:

- *Domains* - this section lists the different areas of the planning problem. For example, under the *Site* heading there are choices for customers, distribution, manufacturing, and suppliers.
- *Reports / Activities for < >* - the information in this section changes and is related to which item is selected in the *Domains* section. For example, in FIGURE 26 *Sellers* is selected in the *Domains* section. The *Reports / Activities* section displays a list of plans and related activities from which to select.
- *Selections / Filters for < >* - the information in this section changes and is related to which item is selected in the *Reports / Activities* section. The Supply Chain/Plan/Seller filter is always displayed, as shown in FIGURE 26. This filter is a combo-pop-down type. It allows the user to select a supply chain, then a plan for the supply chain, and then a seller for the selected plan. The selected hierarchy of supply chain, plan, and seller is used when *Rhythm* displays reports.

Based on which item is selected in the *Reports / Activities* section, a secondary filter might be displayed. The secondary filter allows the user to make a more narrow selection about what information to display in a report. For example, when *Problem List* is selected for a plan, the secondary filter criteria allows the user to choose which type of problems to display in the problem report. Secondary filters are available for the following items:

- Problems List
- Buffers
- Resources
- Operations
- Product Root (Master Sales Plan)

The choices made from these sections vary depending on what information or report is desired. After the final selection is made, click on the *Show Report* button on the bottom of the report. The selected report is displayed.

#### 2.9.4 Import / Export

*Import* and *export* can be performed from any report. The following process reads net changes in demand into Rhythm:

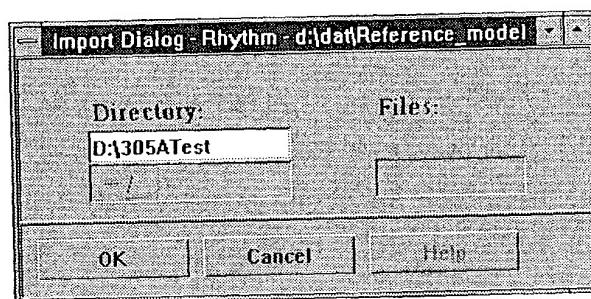
- Display the *Main Explorer* report.
- Select the *File / Import* menu item or the *Import* button from the toolbar. This opens the *Import Dialog* window. See FIGURE 27.
- Specify the directory, then press *OK*.

To display the current information in all reports, select the *File / Update All Reports* menu item or the *Update All Reports* button from the toolbar.

Note that the user needs to create data for the function desired, such as `backlog_import`, `forecast_import`, or `wip_import`.

FIGURE 27

Import Dialog

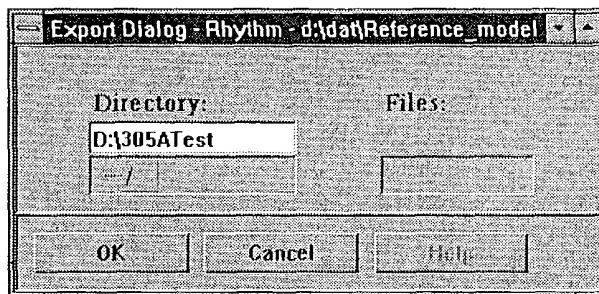


The same procedure may be followed for export.

To select an import or export directory outside of a Rhythm directory, do the following:

- Display the *Main Explorer* report.
- Select the *File / Import* menu item or the *Import* button from the toolbar. This opens the *Import Dialog* window. See
- Specify the directory, then press *OK*.

---

**FIGURE 28****Export Dialog**

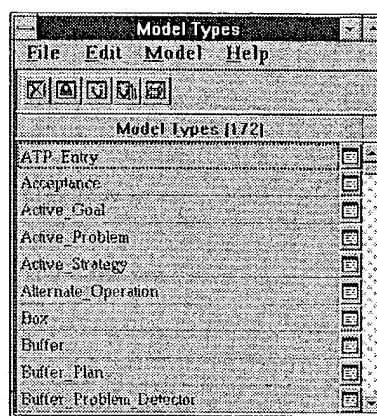
---

## 2.10 Model Types

---

The *Model Types* report displays a list of all model types that are available. See the Rhythm Model Reference Manual for additional details on each model. To display the *Model Types* report, select the *Model / Model Types* menu item. See FIGURE 29.

---

**FIGURE 29****Model Types**

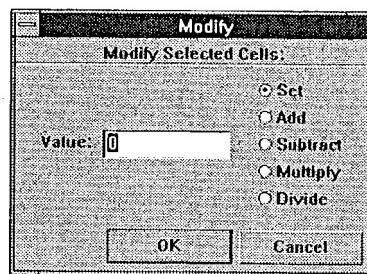
---

## 2.11 Modify

---

*The Modify report*

---

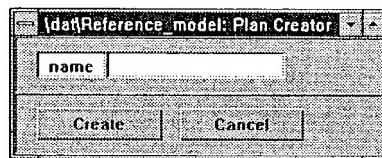
**FIGURE 30****Modify**

## 2.12 New Models

To display a dialog for creating a new instance of a selected model, drag to the *Model / New* menu item. A dialog window is displayed. See FIGURE 31 for an example. Creating a new instance of a location model requires more information than the new name as does other models, so a different dialog window is displayed. See FIGURE 32.

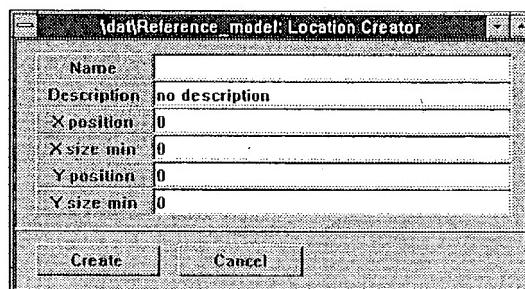
**FIGURE 31**

New Model



**FIGURE 32**

New Location

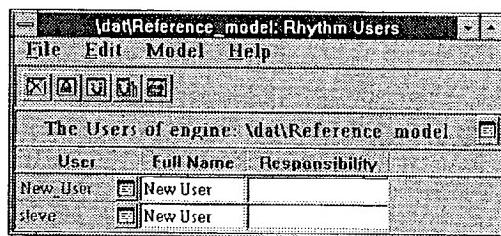


## 2.13 Rhythm Users

The *Rhythm Users* report lists each user of the system and the user-specific settings. See FIGURE 33. The *User* report for a particular user is displayed by selecting the button next to a user name. See the *User* report for additional details.

FIGURE 33

Rhythm Users



### 2.13.1 Displaying a List of All Users

To display a list of all users of the system:

- Display the *Main* report.
- Select the *All Users* button.

## 2.14 Save As

The *Save As* report provides the capability to save the model that exists at the current moment. The *File / Save As* menu item in the *Main* report displays the *Save As* dialog. It requests the name of a file to which to save the model. See FIGURE 34.

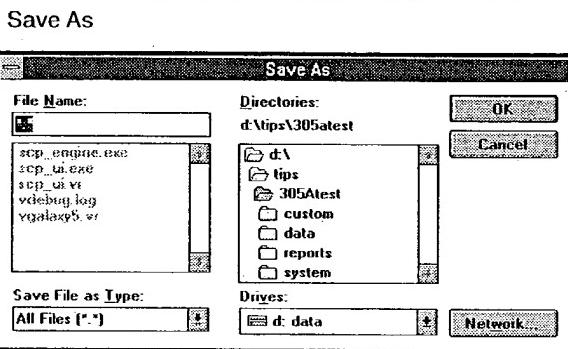
Choose one of the following to specify a file name:

- Select a file name in the list displayed
  - Select the > or < button to display file names in the next higher or lower directory
  - Select the down arrow in the scroll box (in FIGURE 34 this displays *appl*) to move to a directory higher in the directory path. This displays a list of files in the selected directory.
- Type a file name in the entry box under *Save As*:

After specifying a file name, select *Save* to save the model.

The *File / Import* menu item in the *Main* report restores the last model that was saved.

**FIGURE 34**



### 2.14.1 Generating a Plan

To generate a plan:

- Display the *Plan Editor*.
- Select the *Site Plans* tab.
- Select the button next to a site plan name (one with a *Role* of *LINK*). The *Site Plan Editor* is displayed.
- Select the *Requests* tab to display a list of demands to be planned.
- Select the *Planning / Satisfy All Requests* menu item in the *Site Plan Editor*. The demand orders are now planned.

### 2.14.2 Saving a Plan

To save a plan:

- Display the *Main* report.

- Select the *File / Save As* menu item. The *Save As* dialog is displayed.
- Select the directory name in which the plan is to be saved (e.g. *saved\_plans*), then select *OK* (or double click the directory name). The files in the directory are listed.
- Type a plan name (e.g. *testsave*) in the *Save as* box, then select *OK*. The plan is saved in this file.

#### **2.14.3 Restoring a Plan**

To restore a plan:

- Change the directory to the directory that contains the executables.
- Type the following command:

```
scp_engine -open /saved_plans/testsave -port xxxx &
```

The plan is restored from the file.

#### **2.14.4 Resolving File Paths**

File paths for save and restore operations are resolved as follows:

- Once a path is used, it becomes the default until a new default is established.
- Absolute path names are used without change and become the new default.
- Relative path names use as their base the default path, if there is one, or the current directory. If in the latter case the current directory is I2\_HOME, the custom subdirectory is used instead. The result becomes the new default.

---

## **2.15 Set Checkpoint**

---

See *Undo To*.

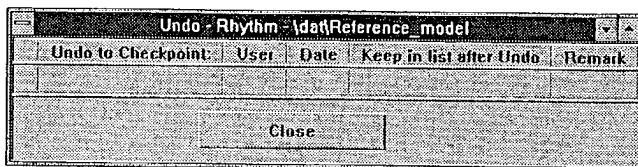
## **2.16 Undo To**

---

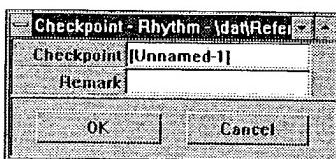
### **2.16.1 Description**

The *Undo To* feature (See FIGURE 35) takes you back to the last checkpoint (the last checkpoint that you created using the *Set Checkpoint* feature. See FIGURE 36). If some change is made which cannot be undone, then all the checkpoints that were created before are cleared. Unless a new checkpoint is created, you cannot undo any of the subsequent tasks.

---

**FIGURE 35****Undo To**

---

**FIGURE 36****Set Checkpoint**

### 2.16.2 Undoable Changes

Table 9 lists actions that can or cannot be undone.

**Table 9: Undo**

| Change                         | Undoable? | Example  |
|--------------------------------|-----------|--|
| Operation Plan                 | Yes       | Deleting an operation plan   |
| Plan                           | Yes       | Moving an alternate operation<br>Moving a task to a later or earlier start time<br>Undoing whatever SDP did  |
| Request / Promise              | Yes       | Adding a new request<br>Deleting a request<br>Modifying an existing request<br>(All these can be undone with corresponding changes to the ATP, forecast request, etc. as necessary)  |
| Strategy Driven Planning (SDP) | Yes       | Changes to which SDP resorts to solve a problem  |
| Edits to Static Data           | No        | Adding / deleting / modifying supply chains<br>Adding / deleting / modifying sites<br>Adding / deleting / modifying buffer policies<br>Adding new products<br>Adding new sellers<br>Adding new items<br>Importing new files into the system<br>Modifying forecasts |
| Multiuser                      | No        | In a multiuser system, when one user sets a checkpoint and another user does something that cannot be undone, then that checkpoint is cleared.   |
| Plan Current<br>Plan Horizon   | No        | Setting <i>plan.horizon</i> or <i>plan.current</i> cannot be undone if the new current date causes the horizon to change.  |
| Plan New / Delete              | No        | Will not be returned to the initial plan1 state prior to satisfying requests. Will not be able to undo because the checkpoint will have been cleared upon creating plan2.  |

### 2.16.3 Undoing Requests

See Table 10 for an example of undoing requests between sites.

**Table 10: Undoing Requests Between Sites**

| Step | Action  |
|------|---|
| 1    | Open Main report.   |
| 2    | Select <i>Set Checkpoint</i> from the <i>Edit</i> menu.   |
| 3    | Open <i>Plan Editor</i> .   |
| 4    | Open an <i>Active Strategy Editor</i> .<br>Note any <i>Problems</i> .   |
| 5    | Select <i>Satisfy All Requests</i> from the <i>Planning</i> menu.   |
| 6    | Select <i>Promise As Planned</i> from the <i>Planning</i> menu.   |
| 7    | Select <i>Update Reports</i> from the <i>File</i> menu.   |
| 8    | Select <i>Undo To</i> from the <i>Edit</i> menu.  |
| 9    | Undo to the checkpoint.   |
| 10   | Select <i>Update Reports</i> from the <i>File</i> menu.<br>The requests created between the two sites of this model are undone. |

When you undo the addition of requests, the requests created by one site are deleted. When you have two sites where one is placing requests on the other and you select *Satisfy All Requests* from the *Planning* menu, the results could depend on the order in which *Satisfy All Requests* gets called on each site. The user does not have any control on that order. *Satisfy All Requests* should be run on each request to avoid this issue.

#### 2.16.4 Undoing Problem Resolution

The changes to which Strategy Driven Planning (SDP) resorts in order to solve a problem can be undone. See Table 11 for an example of undoing the resolution of problems by SDP.

**Table 11: Undoing Problem Resolution**

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| 1           | Open <i>Plan Editor</i> .   |
| 2           | Satisfy All Requests in the plan.   |
| 3           | Open an <i>Active Strategy Editor</i> .<br>Note any <i>Problems</i> .                     |
| 4           | Select <i>Set Checkpoint</i> from the <i>Edit</i> menu.                                   |
| 5           | Select the <i>Run</i> button.<br>The strategy solves the problem.                         |
| 6           | Select <i>Undo To</i> from the <i>Edit</i> menu.  |
| 7           | Undo to the checkpoint.   |
| 8           | Go back to the checkpoint ( <i>Undo to Checkpoint</i> ).<br>The <i>Problems</i> reappear. |

### 2.16.5 Undoing Forecasts

See Table 12 for an example of undoing a forecast.

**Table 12: Undoing Forecasts**

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| 1           | Open Main report.   |
| 2           | Select <i>Set Checkpoint</i> from the <i>Edit</i> menu.   |
| 3           | Open <i>Seller Plan Editor</i> .  |
| 4           | Add committed quantities for 3 or 4 periods.  |
| 5           | Open the Plan Editor.   |
| 6           | Select the Definition tab.  |
| 7           | Change the current time to approximately 1 month from the time at which you are looking at this report. |
| 8           | Select <i>Undo To</i> from the <i>Edit</i> menu.  |
| 9           | Undo to the checkpoint.   |
| 10          | Select <i>Update Reports</i> from the <i>File</i> menu.   |

### 2.16.6 Undoing Imported Forecasts

See Table 13 for an example of undoing an imported forecast.

**Table 13: Undoing Imported Forecasts**

| Step | Action  |
|------|---|
| 1    | Open Main report.   |
| 2    | Open Plan Editor.   |
| 3    | Open Site Editor.   |
| 4    | Select <i>Set Checkpoint</i> from the <i>Edit</i> menu.   |
| 5    | Set the checkpoint as <i>without-forecasts</i> .  |
| 6    | Select the Import option from the File menu.  |
| 7    | Import the forecasts directory.   |
| 8    | Select <i>Undo To</i> from the <i>Edit</i> menu.  |
| 9    | Undo to the checkpoint <i>without-forecasts</i> .<br>This removes delivery and item request, and Request in the Site Plan Editor. |
| 10   | Select <i>Update Reports</i> from the <i>File</i> menu.   |

### 2.16.7 Undoing Plans

The addition and deletion of plans cannot be undone. For example, in the procedure in Table 14, you will not be returned to the initial plan1 state prior to satisfying requests. You will not be able to undo because the checkpoint will have been cleared upon creating plan2.

**Table 14: Undoing Plans**

| Step | Action   |
|------|--|
| 1    | Create plan1                                       |
| 2    | Set Checkpoint                                     |
| 3    | Satisfy All Requests in plan1                      |
| 4    | Make numerous changes in plan1                     |
| 5    | Create plan2<br>The checkpoint in plan1 is cleared |
| 6    | Satisfy requests in plan2                          |
| 7    | Make numerous changes in plan2                     |
| 8    | Undo (will not work)                               |

## 2.17 User

### 2.17.1 Introduction

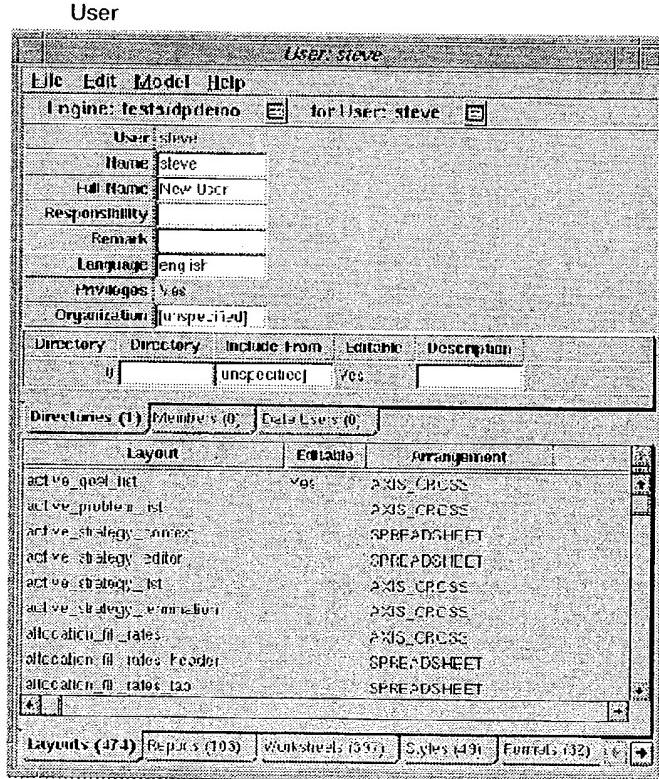
The *User* report serves as a high level window for the creation of new, and the display of existing, worksheets, layouts, reports, formats, import files, and styles. See FIGURE 37.

To display an existing worksheet, layout, report, format, import file, or style, select the appropriate button. A list of choices appears (the *Specfile List Editor* is displayed when the *Specfiles* button is selected). Press and hold the right mouse button on any one entry in the list, and drag to the *Model / Editor* menu item. An appropriate editor appears.

To create a new worksheet, layout, report, format, or style, select the appropriate button, press and hold the right mouse button on any one entry in the list, and drag to the *New* menu item. A dialog appears that requests entry of a new name.

Worksheets, layouts, and reports that have errors are reloaded if the client is restarted. Note that worksheets, layouts, and reports that have been modified (through an editor such as emacs or vi) but that have no errors are not reloaded. This process alleviates having to shut down the engine and start over again.

**FIGURE 37**



### **2.17.2 Displaying User Reports**

To display the *User* report, select the *Edit / User* menu item in the *Main* report.

**Section 3**

# Rhythm SCP Standard Reports

---

## **3.1 Introduction**

---

This section describes the library of standard reports (windows) that is supplied with the *Rhythm* Supply Chain Planner (SCP) graphical user interface (GUI). This library was designed to ensure consistency and easy customization of elements throughout the entire set of reports. It provides users with a starting point for planning and scheduling their manufacturing system. These reports function as a graphical interface to the data that is present in the set of user data files. These data files are communicated to the standard reports (and to user defined reports) through the set of models that are described in detail in the *Rhythm Supply Chain Planner (SCP) Model Reference*.

## **3.2 Purpose**

---

The purpose of the *Rhythm* SCP Standard Reports is to:

- provide users with a starting point for planning and scheduling their particular manufacturing system
- get users up and running quicker as they begin to design additional reports to fine tune *Rhythm* for their specific manufacturing environment
- display the *User* editor, which allows users to design worksheets, layouts, and reports

### 3.3 Report Names

Table 15 lists all standard reports that are available in the *Rhythm* user interface.

The *Report Name* is the title that is displayed at the top of a report.

The *Menu Item / Tab* is the name of the menu item or the name of a tab in the Parent Report that is selected to display the report having a title of *Report Name*.

The *Field* is a column title (that becomes visible after the *Menu Item / Tab*, if any, is activated) for a model field from which the *Report Name* is displayed by selecting the field, then selecting the *Model / Editor* menu item.

**Table 15: Report Names**

| Report Name         | Parent Report Name | Menu Item / Tab     | Field            |
|---------------------|--------------------|---------------------|------------------|
| Active Strategy     | Plan               | Active Strategies   |                  |
| Alternate Operation |                    |                     |                  |
| Buffer              | Item, Site         | Buffers             | Buffer           |
| Buffer Plan         | Site Plan          | Buffers             | Buffer Plan      |
| Calendar            | Supply Chain       | Calendars           | Calendar         |
| Calendar Entry      | Calendar           | Calendar Entry      |                  |
| Delivery Request    | Request            |                     | Delivery Request |
| Extension Selector  | Model Type         | Extension Selectors |                  |
| Field Editor        | Model Type         | Fields              |                  |
| Field Errors        | Supply Chain       | Field Errors        |                  |
| Flow                | Operation          | Flows               | Flow             |
| Flow Plan           | Buffer Plan        | Flow Plans          | Flow Plan        |
| Forecast            | Seller Plan        |                     | Product (Group)  |
| Item                | Site               | Items               | Item             |
| Item Promise        | Request            | Request             |                  |
| Item Request        | Site Plan          | Problems            | Details          |
| Item Unit           |                    |                     |                  |
| Load                | Operation          | Loads               | Load             |

**Table 15: Report Names**

| Report Name          | Parent Report Name      | Menu Item / Tab                       | Field           |
|----------------------|-------------------------|---------------------------------------|-----------------|
| Load Plan            | Resource Plan           |                                       | Load Plan       |
| Location             | Site                    | Locations                             | Location        |
| Lot                  | Buffer Plan             | Capacity Buffers or Inventory Buffers |                 |
| Mass Order Promising | Request Editor          | Mass Order Promising                  |                 |
| Model Type           | Model Types             |                                       | Model Types     |
| Operation            | Site                    | Operations                            | Operation       |
| Operation Plan       | Site Plan               | Operations                            | Operation Plan  |
| Operation State      | Site Plan               | States                                | Operation State |
| Order Entry          | Request Editor          | Order Entry                           |                 |
| Plan                 | Site Plan; Supply Chain | Site, Plans                           | Plan            |
| Problem Editor       | Plan                    | Problem Editor                        |                 |
| Problem List         | Plan                    | Problem List                          |                 |
| Product              | Seller                  | Products                              | Product         |
| Product Group        | Seller                  | Product Groups                        | Product Group   |
| Product Item         | Product Root            |                                       |                 |
| Product Root         | Seller                  | Product Roots                         | Product Root    |
| Request              | Site Plan               | Requests                              | Request         |
| Resource             | Site                    | Resources                             | Resource        |
| Resource Plan        | Site Plan               | Resources                             | Resource Plan   |
| Routing Operation    | Operation               | Routing Operation                     |                 |
| Seller               | Supply Chain            | Sellers                               | Seller          |
| Seller Plan          | Plan                    | Seller Plans                          | Seller Plan     |
| Site                 | Supply Chain            | Sites                                 | Site            |
| Site Plan            | Plan                    | Site Plans                            | Site Plan       |
| Skill                | Resource                | Skills                                | Skill           |
| Strategy             | Active Strategy         |                                       | Strategy        |
| Sub Calendar         | Calendar                | Subcalendar                           |                 |

**Table 15: Report Names**

| Report Name        | Parent Report Name | Menu Item / Tab | Field             |
|--------------------|--------------------|-----------------|-------------------|
| Sub Calendar Entry | Calendar           | Calendar Entry  |                   |
| Sub Product        | Product Group      | Sub Products    | Sub Product       |
| Sub Product Group  | Product Group      | Sub Groups      | Sub Product Group |
| Supply Chain       | Main               |                 | Supply Chain      |

## 3.4 Active Strategy

### 3.4.1 Description

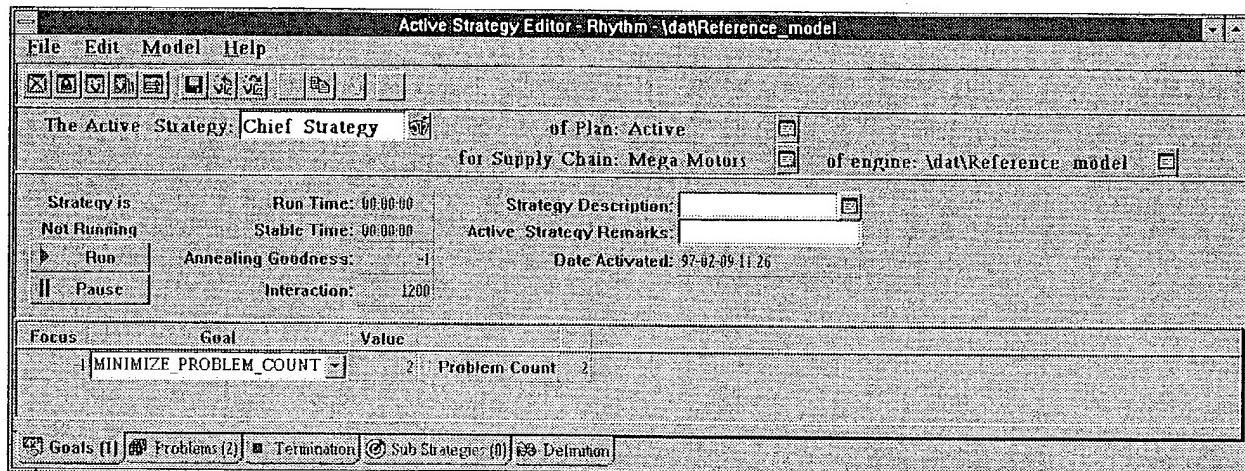
An *Active Strategy* of a plan is a strategy that remains up to date on every plan change. Fields include:

- *Strategy* - displays whether strategy is running or not running
- *Run Time* - amount of time strategy is running
- *Annealing Goodness* - the goodness measure that is user specified in the Active\_Strategy model
- *Interaction* - the measure of the impact of infeasibility on the goal

See FIGURE 38.

**FIGURE 38**

Active Strategy

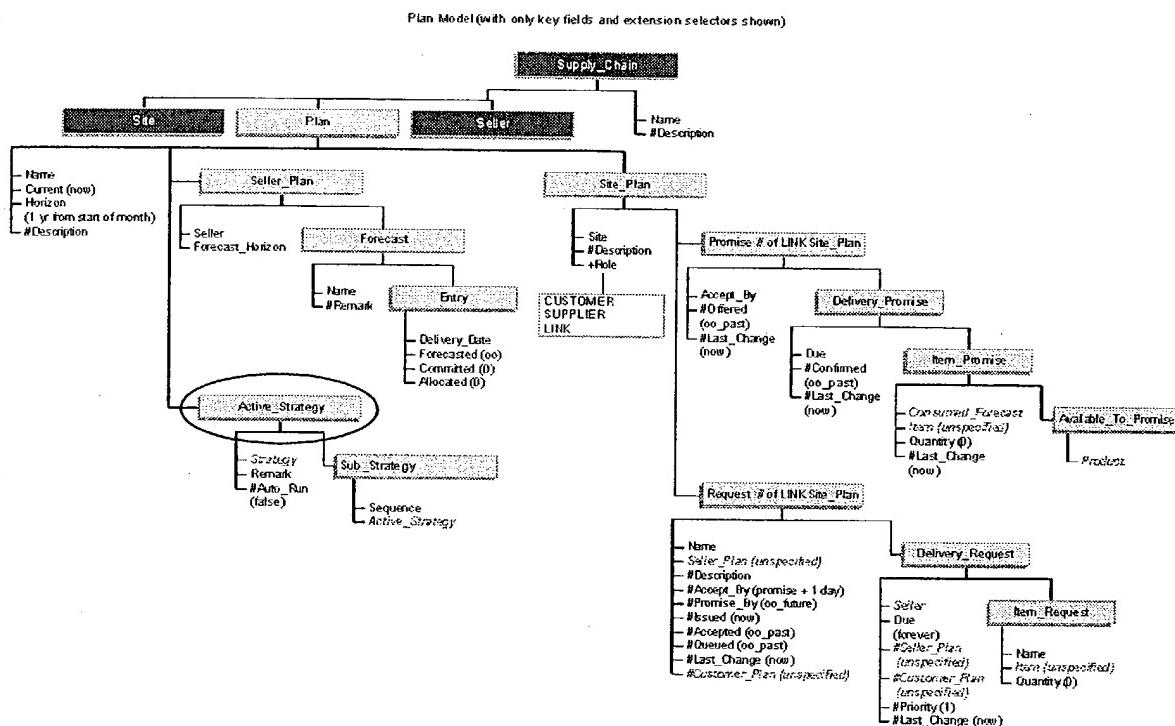


### 3.4.2 Model Structure

FIGURE 39 shows the relationship of the model to its parent model and submodels.

FIGURE 39

Model Structure



### 3.4.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Active Strategy* report.

Parent Model: Plan

Submodels: Sub\_Active\_Strategy, Active\_Problem, Active\_Goal

### 3.4.4 Displaying an Active Strategy

To display the *Active Strategy Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Active Strategies</i> from the list of <i>Reports/Activities for Plans</i> .                            |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays with the <i>Active Strategies</i> tab having focus. |
| 6    | Select the <i>Report</i> button next to an active strategy name. The <i>Active Strategy Editor</i> displays.      |
| 7    | (To add a new active strategy, select the <i>Model / New</i> menu item.)  |

### 3.4.5 SDP and Active Strategies

To demonstrate the use of active strategies in strategy driven planning, first perform the following planning steps:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Active Strategies</i> from the list of <i>Reports/Activities for Plans</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays with the <i>Active Strategies</i> tab having focus.   |
| 6    | Select the <i>Site Plans</i> tab.   |
| 7    | Select the <i>Report</i> button next to a site plan name. The <i>Site Plan Editor</i> is displayed.   |
| 8    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.  |
| 9    | Select the <i>Planning / Promise As Planned</i> menu item.  |
| 10   | Select the <i>Buffers</i> tab.  |
| 11   | Select the button next to a buffer plan name. The <i>Buffer Plan Editor</i> is displayed. Assume that this buffer has a BASIC load policy with min_on_hand of 50 and min_time of 1 week. The delivery operations which consume from this buffer should be planned for 100 units at the beginning of each month starting 07/01/96. One would expect the supplying operation to be scheduled 1 week in advance or earlier, when the resource calendar for the resource does not allow delivery exactly a week in advance. Therefore, the expected behavior of this buffer should be: inflow of 100 one week before end of month, outflow of 100 at beginning of month. The first month is different since the buffer start empty, so the inflow is 150. |
| 12   | In the <i>Buffer Plan Editor</i> , change <i>Buckets</i> to <i>Whole Horizon</i> .  |
| 13   | Check for duplicate replenishments and their scheduled arrival times.   |
| 14   | Select the <i>Problems</i> tab.   |
| 15   | Resolve the first EXCESS_ON_HAND problem.   |
| 16   | Return to the <i>Flow Plans</i> tab. Duplicate replenishments have disappeared.   |

Once the planning steps have been completed, perform the strategy driven planning:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Active Strategies</i> from the list of <i>Reports/Activities for Plans</i> .                            |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays with the <i>Active Strategies</i> tab having focus. |
| 6    | Check the strategy's focus values for NEGATIVE_ON_HAND and for EXCESS_ON_HAND.                                    |
| 7    | Check that the goal is MINIMIZE_PROBLEM_COUNT.  |
| 8    | Check the run time.   |
| 9    | Run the Eliminate Buffer Problems active strategy. This strategy allows only move in and move out.                |
| 10   | When the strategy completes, check the number of problems with which it terminates.                               |
| 11   | Open the <i>Buffer Plan Editor</i> . Note any inventories that have accumulated.                                  |

### 3.4.6 Problems

The *Problems* tab control displays problems of various categories.

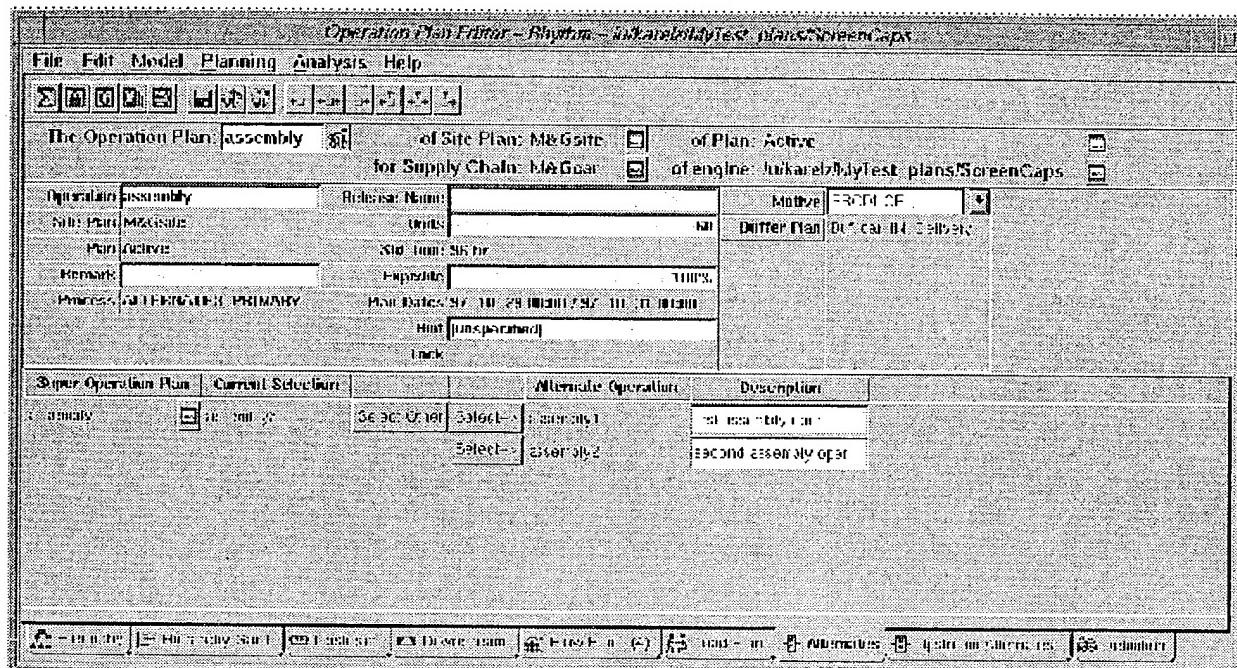
## 3.5 Alternate Operation

### 3.5.1 Description

The *Alternate Operation* presents one other operation that can be selected for performing the operation. See FIGURE 40.

FIGURE 40

Alternate Operation



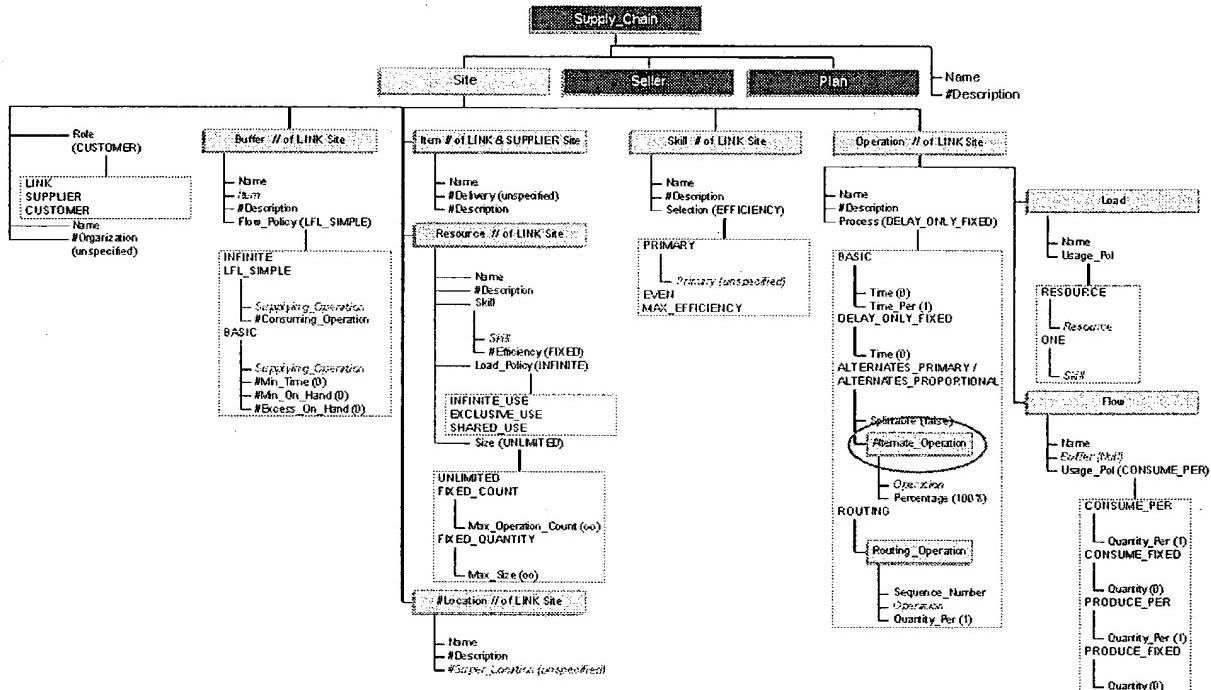
### 3.5.2 Model Structure

FIGURE 41 shows the relationship of the model to its parent model and submodels.

**FIGURE 41**

Model Structure

Site Model (with only key fields and extension selectors shown)



### 3.5.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Alternate Operation* report.

#### Parent Model: Operation

### 3.5.4 Displaying an Alternate Operation

To display the *Alternate Operation Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.   |
| 6    | Select the <i>Site Plans</i> tab.  |
| 7    | Select the button next to a site plan name. The <i>Site Plan Editor</i> is displayed.  |
| 8    | Select the <i>Planning / Satisfy All Unanswered Requests</i> menu item.  |
| 9    | Select the <i>Operations</i> tab.  |
| 10   | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed.   |
| 11   | Select the <i>Alternates</i> tab to look at the alternate operations.  |
| 12   | Select an alternate operation, then select the <i>Model / Editor</i> menu item. The <i>Alternate Operation Editor</i> is displayed.  |
| 13   | Select <i>Alternates</i> . Note the percentage for the alternate that was chosen. The alternate whose percentage is 100 should have been selected. Primary alternate is initialized only from among those alternates with the highest percentage. Alternates remain sorted in non-decreasing order in the site model to avoid recalculations in plans. |
| 14   | (To add a new alternate operation, select the <i>Model / New</i> menu item.)   |

### 3.5.5 SDP Offloading to an Alternate Operation

To use Strategy Driven Planning (SDP) to offload to an alternate operation:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.   |
| 6    | Select the <i>Site Plans</i> tab.  |
| 7    | Select the button next to a site plan name. The <i>Site Plan Editor</i> is displayed.  |
| 8    | Select the <i>Planning / Satisfy All Requests</i> menu item.   |
| 9    | Select the <i>Problems</i> tab. Note the NEGATIVE_ON_HAND problem.   |
| 10   | Select the <i>Operations</i> tab.  |
| 11   | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed.   |
| 12   | Select the <i>Load Plans</i> . Note the <i>Resource Plan</i> name.   |
| 13   | In the <i>Plan Editor</i> , select the <i>Active Strategies</i> tab, then select the <i>Run</i> button for a strategy.   |
| 14   | When the strategy completes, return to the <i>Operation Plan Editor</i> .  |
| 15   | Select the <i>File / Update All Reports</i> menu item. The <i>Resource Plan</i> changes to unspecified.  |
| 16   | Return to the <i>Site Plan Editor</i> .  |
| 17   | Select the <i>File / Update All Reports</i> menu item. Note the number of operation plans.   |
| 18   | Look at the operation plans. The strategy has offloaded to the alternate operation.  |
| 19   | Select an alternate operation, then select the <i>Model / Editor</i> menu item. The <i>Alternate Operation Editor</i> is displayed.  |
| 20   | Select <i>Alternates</i> . Note the percentage for the alternate that was chosen. The alternate whose percentage is 100 should have been selected. Primary alternate is initialized only from among those alternates with the highest percentage. Alternates remain sorted in non-decreasing order in the site model to avoid recalculations in plans. |
| 21   | (To add a new alternate operation, select the <i>Model / New</i> menu item.)   |

### 3.5.6 Planning an Alternate Operation for a Request

To plan an *Alternate Operation* for a request:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.   |
| 6    | Select the <i>Site Plans</i> tab.  |
| 7    | Select the button next to a site plan name. The <i>Site Plan Editor</i> is displayed.  |
| 8    | Select the <i>Planning / Satisfy All Unanswered Requests</i> menu item.  |
| 9    | Select the <i>Requests</i> tab.  |
| 10   | Select the button next to a request name. The <i>Request Editor</i> is displayed.  |
| 11   | Select the <i>Plan Alternates</i> tab to look at the alternate operations.   |
| 12   | Select an alternate operation, then select the <i>Model / Editor</i> menu item to display the <i>Alternate Operations Editor</i> .   |
| 13   | Select <i>Alternates</i> . Note the percentage for the alternate that was chosen. The alternate whose percentage is 100 should have been selected. Primary alternate is initialized only from among those alternates with the highest percentage. Alternates remain sorted in non-decreasing order in the site model to avoid recalculations in plans. |
| 14   | (To add a new alternate operation, select the <i>Model / New</i> menu item.)   |

### 3.5.7 Propagating Changes for Deselected Operations

Alternate operation selection propagates changes for deselected operations:

| Step | Action  |
|------|---|
| 1    | Display the <i>Site Plan Editor</i> .   |
| 2    | Select the <i>Requests</i> tab.   |
| 3    | Select the button next to a request name. The <i>Request Editor</i> is displayed.   |
| 4    | Select a delivery request and plan that request.  |
| 5    | Select the <i>File / Update All Reports</i> menu item.  |
| 6    | In the <i>Site Plan Editor</i> , select the <i>Operations</i> tab.  |
| 7    | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed.  |
| 8    | Select the <i>Alternates</i> tab.   |
| 9    | Select an alternate part.   |
| 10   | Select the <i>File / Update All Reports</i> menu item.  |
| 11   | Return to the operation plan list in the <i>Site Plan Editor</i> . Note that there is no longer an operation plan by the same name. This is expected because it was deselected. Note that there is a new operation name. This is the alternate part that was selected. Changes made by selecting alternate parts propagate backwards, resulting in excess on hand for a part. When <i>Resolve</i> is selected, the problem is resolved. |

### 3.5.8 Switching Alternate Operations

To switch to Alternate Operations of an ALTERNATES\_PRIMARY operation:

- Access the Operation Plan (via Supply Chain then Site Plan).
- Select the Alternate Operations button to view the alternates.
- The checkbox for the primary operation should be selected.
- Select any of the alternate operations by selecting the associated checkbox.

*move\_to\_alternate* needs two operation plans (not operations) as arguments. It should have the operation plan of the ALTERNATES\_PRIMARY operation and of the operation plan of the alternate to be used.

For example:

```
action: select =
engine(owner_op_plan.first.move_to_alternate(owner_op_plan.first.sub_operation_plans.first, alternate_operation.operation));
```

Not:

```
action: select =
engine(owner_op_plan.first.move_to_alternate(owner_op_plan.first.sub_operation_plans, alternate_operation));
```

If a buffer's supplying operation is an ALTERNATES\_PRIMARY with sub-operations drawing from two different buffers, then switching from the primary to the alternate has the following behavior. A NEGATIVE\_ON\_HAND problem is created on the newly selected buffer. If this buffer does not have any excess large enough (sometime in the future) the buffer creates an upstream replenishment as does all succeeding buffers. ALTERNATES\_PRIMARY always selects the primary operation when an operation plan is planned for the first time. In the case of ALTERNATES\_PROPORIONAL, there is no concept of primary. The selection is based on percentage weight given by the user.

### **3.5.9 Percentage**

To change the percentage of times that an alternate operation is typically selected:

- the cell expression should be:  
if(alternate\_operation.percentage > 0.40, "PRIMARY", "ALTERNATE").  
Note that 40 would mean 4000%, so 0.40 is needed for 40%.

### **3.5.10 Supplying Operation**

The following items are checked to validate an operation. Valid output flows are validated, and the upstream operation plan is planned:

- alternate operations for valid supplying flows.
- alternate operations for valid consuming flows.
- super operation of those alternate operations.

The buffer plan's operation generates the supplying operation plans. The on-hand quantity has a positive value if there was initial on-hand with which to start and current flow policies do not deal with excess quantities.

When a given supplying operation for a buffer does not satisfy the produce motive, the supplying operation is switched to an unspecified operation. For this reason, it might seem that the operation disappears.

The super operation is searched for satisfying flow.

If the LFL\_SIMPLE buffer has allocations but no supplying operations are generated, then negative inventory projections may result.

## 3.6 Buffer

### 3.6.1 Description

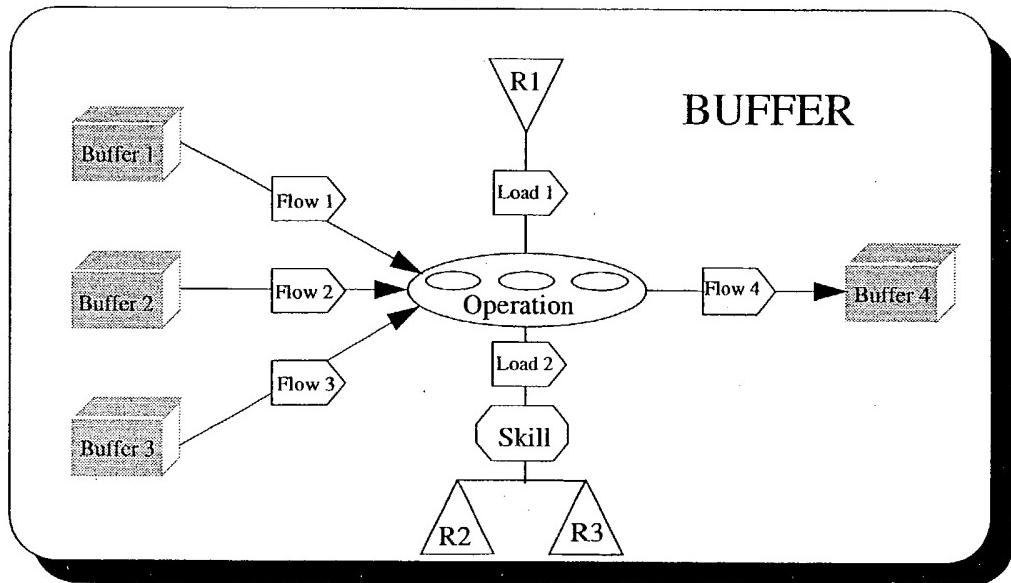
A *Buffer* models the management of the flow of interchangeable items. See FIGURE 42. It handles most of the material/inventory planning functionality.

It can model all flow of a particular item, or a subset of that flow. In modeling a supply chain, a buffer typically only models the flow of items at a particular location (a SKU). Items at different locations are usually not interchangeable (transportation is needed).

Each buffer manages the flow of one item. Buffer uses a Flow\_Policy extension to implement material planning rules. Buffer has supplying, storage, receiving, and picking operations.

FIGURE 42

FLO Network Model - Buffer

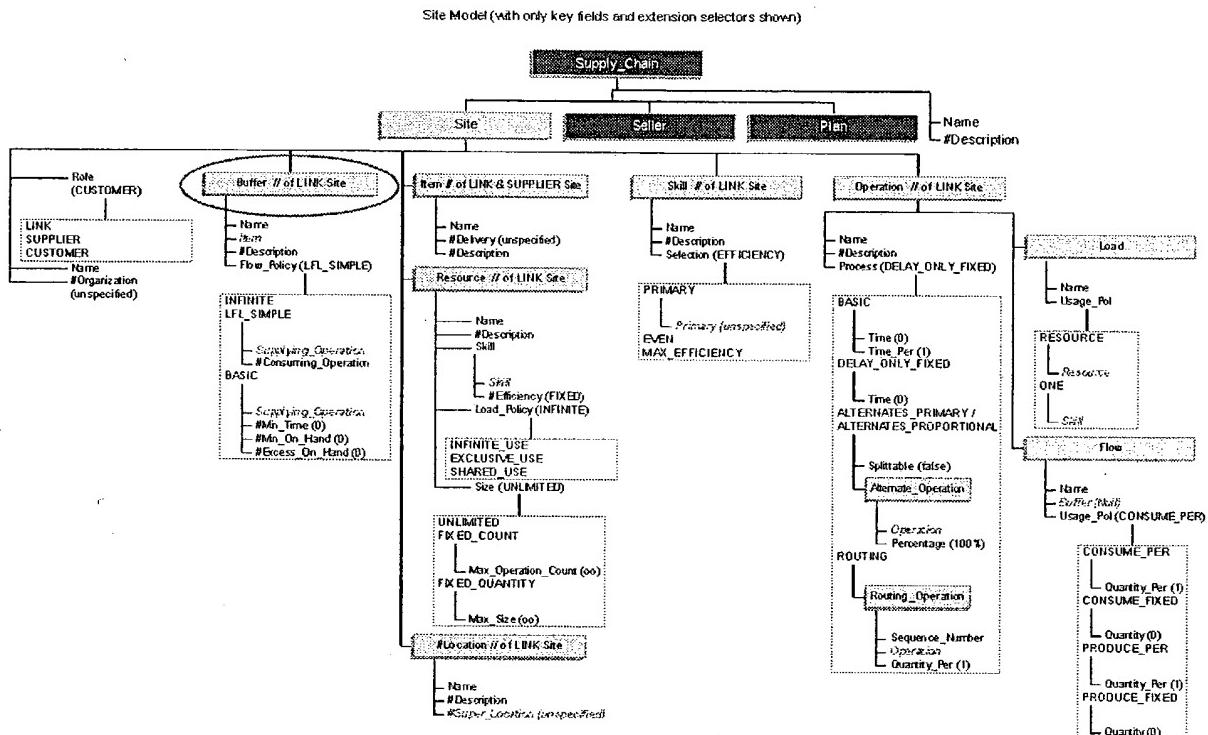


### 3.6.2 Model Structure

FIGURE 43 shows the relationship of the model to its parent model and submodels.

**FIGURE 43**

## Buffer Model Structure



### 3.6.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Buffer* report.

### **Parent Model: Site**

## Submodels: Buffer Problem Detector

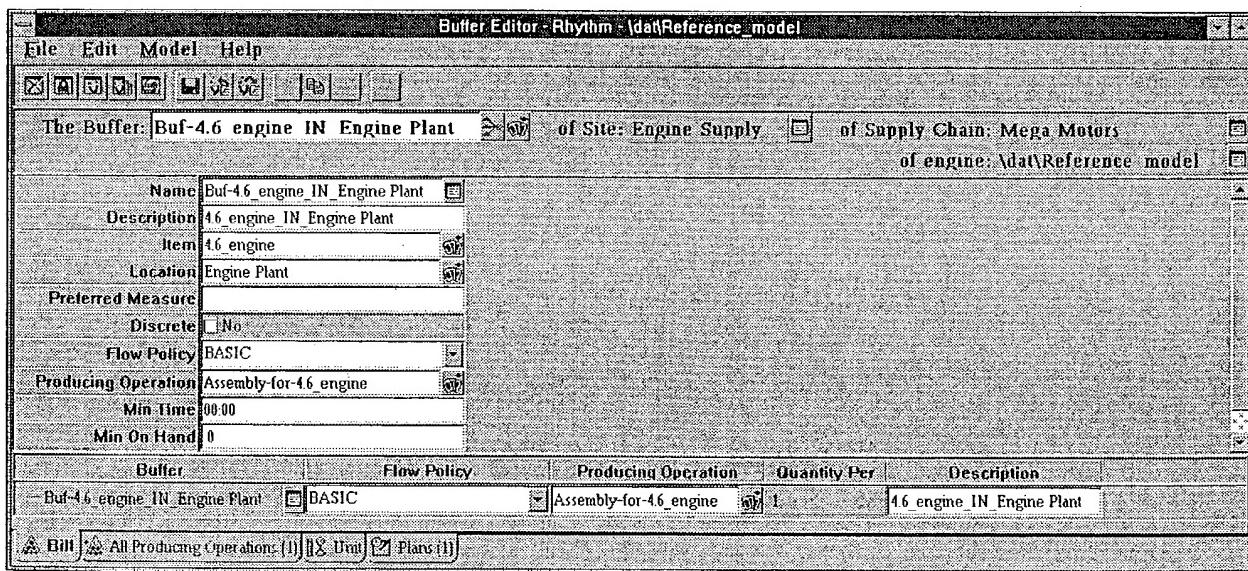
### 3.6.4 Displaying a Buffer

To display the *Buffer Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .  |
| 4    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.  |
| 5    | From the <i>Supply Chain Editor</i> , select the <i>Sites</i> tab. Then select the <i>Report</i> button next to a site name. The <i>Site Editor</i> is displayed.   |
| 6    | From the <i>Site Editor</i> , select the <i>Buffers</i> tab (or select the <i>Items</i> tab, then select the <i>Buffers</i> tab in the <i>Items Editor</i> ). Then select the <i>Report</i> button next to a buffer name. The <i>Buffer Editor</i> is displayed. See FIGURE 44. |
| 7    | (To add a new buffer, select the <i>Model / New</i> menu item.)   |

FIGURE 44

Buffer



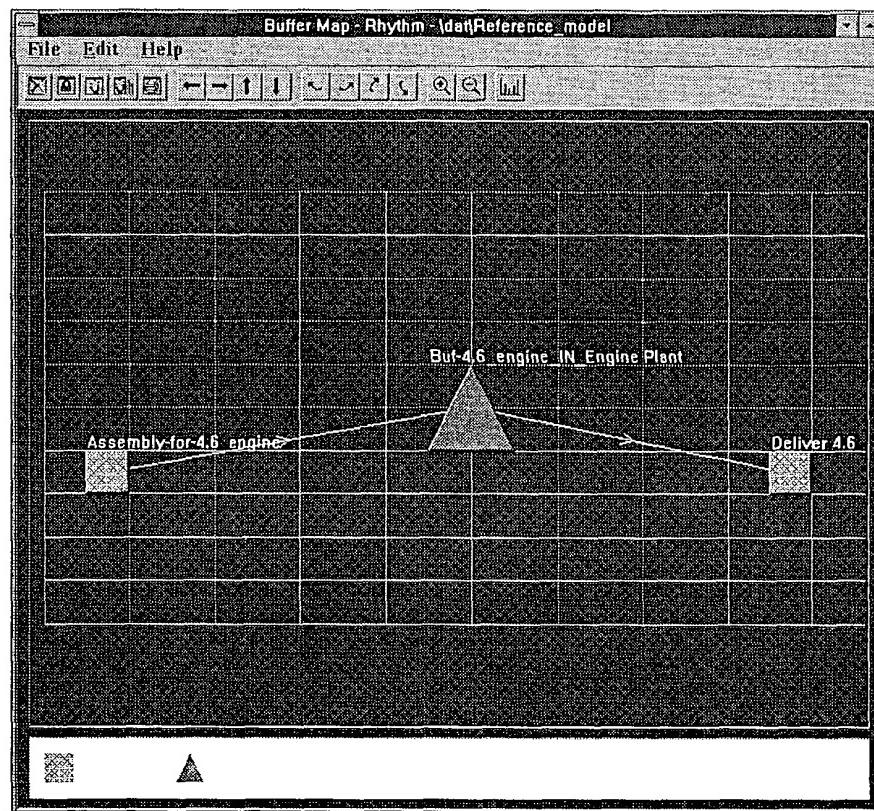
### 3.6.5 Displaying a Buffer Map

To display a *Buffer Map*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Buffer</i> editor.  |
| 2    | Select the <i>Map</i> button next to the <i>Buffer</i> name. The <i>Buffer Map</i> for this operation is displayed. See FIGURE 45. |
| 3    | Note the number of inflows and outflows.   |

FIGURE 45

Buffer Map



### 3.6.6 Tying a Calendar to a Buffer

Rhythm can model changes in supplies to buffers over time by using calendars. See the *Calendar* section in this manual for more information.

To tie a calendar to a buffer:

| Step | Action   |
|------|--|
| 1    | In the <i>Buffer Editor</i> change the <i>Flow Policy</i> to SUPPLY CALENDAR or ON HAND CALENDAR. When the change is made, the following fields are removed from the report: <i>Supplying Operation</i> , <i>Min Time</i> , <i>Min On Hand</i> , and <i>Excess On Hand</i> . There is now a <i>Calendar</i> field, with a value of [ <i>unspecified</i> ]. |
| 2    | Select [ <i>unspecified</i> ] and type in the name of the desired calendar.  |
| 3    | Press Enter.   |
| 4    | Select <i>File/Update Report</i> .   |

## 3.7 Buffer Plan

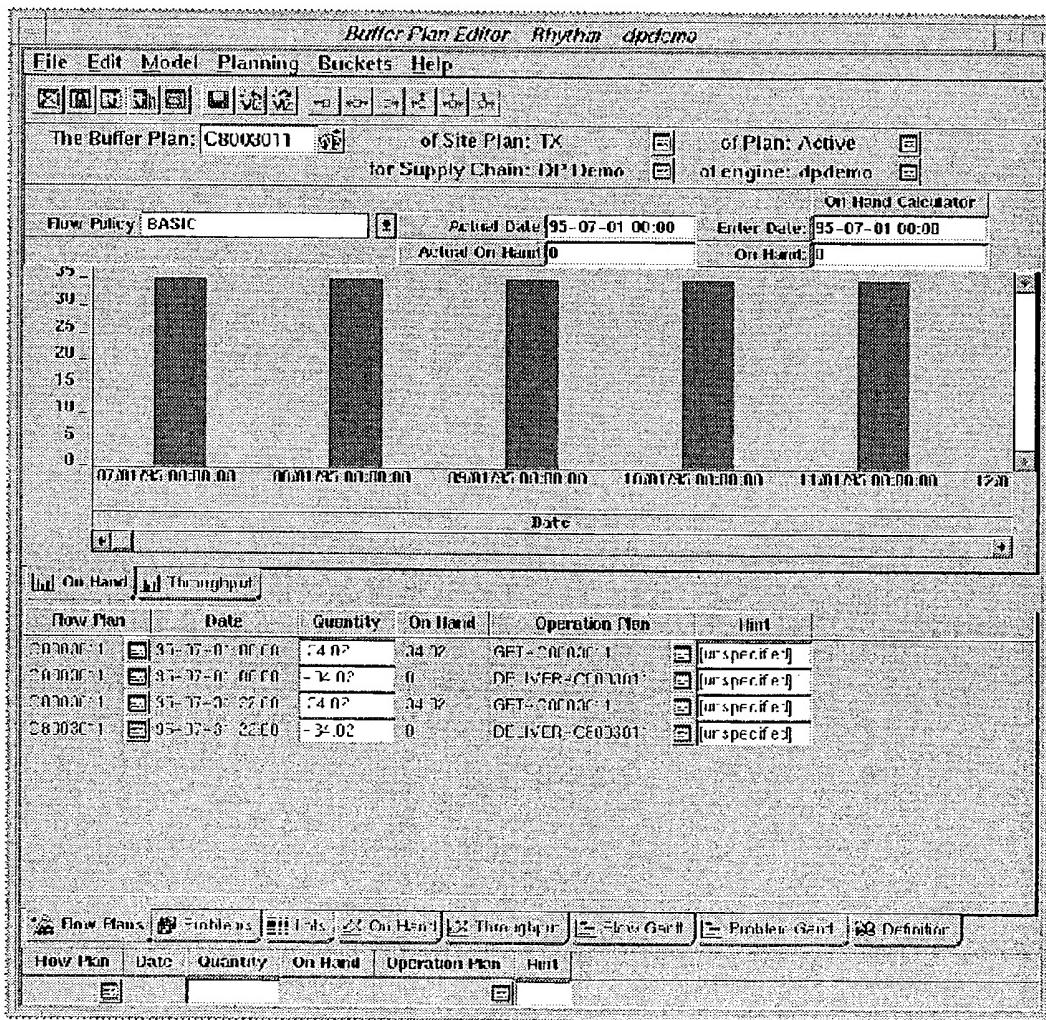
### 3.7.1 Description

The *Buffer Plan Editor* models the management of the contents of a buffer. See FIGURE 46. It shows input and output flows to a buffer, and planned quantities in the buffer at selected times. The fields of a buffer plan specify:

- the buffer being planned.
- plans of all flows into and out of this buffer.
- problems detected with this buffer plan.

FIGURE 46

Buffer Plan



### 3.7.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Buffer Plan* report.

Parent Model: Site\_Plan

Submodels: Lot

### 3.7.3 Buffer Plan Editor

The *Buffer Plan Editor* has four sections of information. The four sections contain the following information:

- Basic buffer information.
- Plan time horizon bar charts.
- Time bucket details.
- Flow plan details.

The top section of the *Buffer Plan Editor* has the basic information about the buffer.

### 3.7.4 Flow and Quantity Bar Charts

The second section of the *Buffer Plan Editor* gives an overview of buffer quantities and input/output flows over the plan time horizon. It contains bar charts in a tabbed layout. Select each tab to display each chart.

These charts show bars in each time bucket over the plan horizon. The bucket size can be changed to view different time periods, such as whole horizon, quarters, months, or weeks. To change the bucket size, select *Buckets* in the menubar to display a list of choices. When a different time horizon is selected, the information on the bar chart changes.

The *On Hand* bar chart has three bars for each time bucket. The bars show the following three items:

- smallest on-hand quantity.
- largest on-hand quantity.
- desired minimum on-hand quantity.

The *Throughput* bar chart shows two bars for each time bucket. The bars show the total input flow and total output flow during each time bucket. If the bars are the same size, then no inventory is added or removed during that time bucket. If the input flow bar is larger than the output flow bar, then the difference is the amount that the on-hand inventory increased during the time bucket. If the output flow bar is larger, then that is the amount the on-hand inventory decreased during the time bucket.

### 3.7.5 Time Bucket Details

#### 3.7.5.1 Description

The third section of the *Buffer Plan Editor* displays information about a particular time bucket from a bar chart. Select a bar in a bar chart to select a time bucket, and information about that bucket is displayed in the selected layout in this section. For example, if a one month time period is selected in the *On Hand* bar chart in the second section, then the *Flow Gantt* chart in this section shows the individual flow plans that are in that bucket.

The *On Hand* line chart in this section shows the on-hand quantity over time during the selected time bucket. Each change in on-hand quantity is shown precisely. If the flow is continuous, the slope of the line in the chart shows the rate of inflow or outflow planned for the buffer.

The *Throughput* line chart has two lines. One shows the cumulative inflow to the buffer during the selected time bucket. Each supplying flow plan is shown precisely. The rate of continuous inflow is shown by the slope of the line. The second line shows the cumulative outflow from the buffer over time.

The inflow line starts with the on-hand quantity planned at the beginning of the bucket. The distance between the inflow line and the outflow line on any date is the on-hand value on that date. If the outflow line ever goes above (crosses) the inflow line, there is a negative on-hand problem until the outflow line crosses below the inflow line.

#### 3.7.5.2 Computing Average On Hand Stock Level

To compute the average on hand stock level for buffers by time buckets, one approach would be to create a list of dates within a time bucket, and generate a list of on hand quantities for each of those which can then be averaged. For a simple case, consider the following example:

```
replicating some_worksheet(Buffer_Plan bp, Date_Range bucket)
{
    avg_oh = list(bucket.start,
                  bucket.end).for_each(buffer_plan.on_hand(#)).average;
}
```

The points within the bucket at which on hand values are computed can be expanded upon by using the standard time and date functions.

### 3.7.6 Bucket Rolling Behavior

#### 3.7.6.1 Description

Buckets contain a list of all the weeks from the *plan.horizon.start* to the *plan.horizon.end*. If the *plan.current* is not equal to the *plan.horizon.start*, then buckets will always start on the same day even if you move forward from Monday to Tuesday (since the reference [*horizon.start*] is fixed). The buckets could be defined as follows. This will maintain a rolling window as current changes:

```
variable bucket_list = weeks(horizon.current \ horizon.end)
```

### 3.7.6.2 Example

The bucket rolling behavior for the following scenario is needed:

```
variable horizon = plan.horizon
variable bucket_list = weeks(horizon)

[ A1 bucket = bucket_list; ]
[ A2 date = bucket.start; ]

[ C1 planned_available = item.buffer_plans(plan).for_each(#.on_hand(date)).sum;
]
```

This example specifies weekly buckets (*weeks(horizon)*). Assume that Monday is the first day of the current bucket. *planned\_available* returns the planned on hand quantity for today (Monday), as the *date* is the *bucket.start*. If the *date* is defined as *bucket.end*, then the *planned\_available* at the end of the week is provided.

### 3.7.7 Flow Plan Details

The bottom layout in the *Buffer Plan Editor* provides more information about a selected flow plan in the third section. Select a flow plan in the third section to select it, and the flow plan information is displayed in the bottom section.

### 3.7.8 Help Information

To display a description of any of the charts or other information provided on the *Buffer Plan Editor*, click anywhere in the selected layout, then select *Help* in the menubar to display the *Help* menu. In the *Help* menu, select *On Layout*.

### 3.7.9 Displaying a Buffer Plan Editor

To display the *Buffer Plan Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Capacity Buffers</i> or <i>Inventory Buffers</i> (in <i>FLO Network</i> tree) from the list of <i>Domains</i> . |
| 4    | Select <i>Buffer Plan Editor</i> from the list of <i>Reports/Activities for...</i>  |
| 5    | Click <i>Display Report</i> . The <i>Buffer Plan Editor</i> displays.   |
| 6    | (To view the buffer plan for a different plan, click the <i>Choose</i> button and select a plan from the displayed list.) |

### 3.7.10 Switching Between Different Buckets for Throughput

To switch between different buckets for throughput in the *Buffer Plan*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.  |
| 6    | Select the <i>Problems</i> tab.   |
| 7    | From the <i>Planning</i> menu, select the <i>Planning / Satisfy All Requests</i> menu item.                                 |
| 8    | From the <i>File</i> menu, select the <i>Update Report</i> menu item or click the <i>Update Report</i> button.              |
| 9    | Resolve the overload problem.   |
| 10   | Select a buffer to go to its <i>Buffer Plan Editor</i> . The report opens with the on hand graph shown by monthly buckets.  |
| 12   | Select the <i>Buckets / Whole Horizon</i> menu item and reselect monthly buckets to confirm it works for the on hand graph. |
| 13   | Select the <i>Throughput</i> tab to view the throughput graph by month.   |
| 14   | Select the <i>Buckets / Whole Horizon</i> option.   |

### 3.7.11 Using the On Hand Calculator

To calculate the ON\_HAND CALENDAR Buffer Plan:

| Step | Action  |
|------|---|
| 1    | Display the <i>Site Plan Editor</i> .   |
| 2    | Select the <i>Planning / Satisfy All Unanswered Requests</i> menu item.   |
| 3    | Select the <i>Buffers</i> tab.  |
| 4    | Select the button next to a buffer plan name. The <i>Buffer Plan Editor</i> is displayed.   |
| 5    | Select the <i>On Hand</i> tab. The on hand calendar specifies an on hand quantity for a date.   |
| 6    | Note the date of the first consumption after the on hand date, and note the quantity of the first consumption.  |
| 7    | To calculate the on hand quantity that is available for the first consumption, enter the date of the first consumption in the <i>On Hand Calculator</i> . |

### 3.7.12 Detecting a Buffer Problem

When an operation that supplies a buffer is moved later, the buffer on hand becomes negative and a problem is detected:

| Step | Action   |
|------|--|
| 1    | Display the <i>Site Plan Editor</i> .  |
| 2    | Select the <i>Planning / Satisfy All Unanswered Requests</i> menu item.  |
| 3    | Select the <i>Buffers</i> tab.   |
| 4    | Select the button next to a buffer plan name. The <i>Buffer Plan Editor</i> is displayed.  |
| 5    | In the <i>Site Plan Editor</i> , select the <i>Operations</i> tab.   |
| 6    | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed.   |
| 7    | Using the <i>Hint</i> field, change the operation plan to "start after 95-07-01 00:00:00" (or whatever date).  |
| 8    | Return to the <i>Buffer Plan</i> and select the <i>File / Update Report</i> menu item. The buffer now has negative on hand, and the operation plan has been moved. |
| 9    | Return to the <i>Site Plan Editor</i> and select the <i>File / Update Report</i> .   |
| 10   | Return to the <i>Buffer Plan</i> , select the <i>Problems</i> tab, and note the buffer problems (i.e. they are detected).  |

### 3.7.13 Resolving a NEGATIVE\_ON\_HAND Buffer Problem Manually

When an operation that supplies a buffer is moved later, the buffer on hand becomes negative and a problem is detected. To resolve the NEGATIVE\_ON\_HAND buffer problem manually:

| Step | Action   |
|------|--|
| 1    | Display the <i>Site Plan Editor</i> .  |
| 2    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests that were read.  |
| 3    | Select the <i>Buffers</i> tab.   |
| 4    | Select the button next to a buffer plan name. The <i>Buffer Plan Editor</i> is displayed.  |
| 5    | Select the Problems tab. Note the buffer problems and interaction value.   |
| 6    | In the <i>Site Plan Editor</i> , select the <i>Operations</i> tab.   |
| 7    | Check all the problems by selecting the <i>All Problems</i> .  |
| 8    | Select the <i>Load Profile</i> . Note overloaded buckets.  |
| 9    | Select a red bar to display the operation plans.   |
| 10   | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed.   |
| 11   | Using the <i>Hint</i> field, move the operation plan to the next bucket. For example, if the plan date is 96-08-31 20:40 / 96-08-31 22:20, then specify "start after 96-09-01 00:00:00". |
| 12   | Select the <i>File / Update Report</i> menu item. All the loads are balanced.  |
| 13   | Select <i>All Problems</i> . No new problems are generated as a result of manually solving this problem.   |

### 3.7.14 Resolving a NEGATIVE\_ON\_HAND Buffer Problem Automatically

When an operation that supplies a buffer is moved later, the buffer on hand becomes negative and a problem is detected. To resolve the NEGATIVE\_ON\_HAND buffer problem automatically:

| Step | Action   |
|------|--|
| 1    | Display the <i>Site Plan Editor</i> .  |
| 2    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests that were read.      |
| 3    | In the <i>Plan Editor</i> , select the <i>Problems</i> tab.  |
| 4    | Select the <i>Resolve</i> button next to a problem. The problem is resolved by strategy driven planning (SDP). |

### 3.7.15 Flow Plan

The *Flow Plan* tab control displays the *Flow Plan Editor*.

Changing a buffer's flow policy from INFINITE or FIXED\_QUANTITY to LFL\_SIMPLE produces supplying flow plans to account for all consuming flow plans of the buffer. To test these flow plans:

| Step | Action   |
|------|--|
| 1    | Select the <i>Site Plan</i> .  |
| 2    | Open the <i>Buffer Plan</i> for a buffer.                                    |
| 3    | Select the <i>Flow Plan</i> tab to see flow plans.                           |
| 4    | Open the <i>Buffer Editor</i> (from the <i>Buffer Plan</i> ) for the buffer. |
| 5    | Change the buffer's <i>Flow Policy</i> to INFINITE.                          |
| 6    | Update the <i>Buffer Plan Editor</i> to see a change in flow plans.          |
| 7    | Change the buffer's <i>Flow Policy</i> to LFL_SIMPLE.                        |
| 8    | Update the <i>Buffer Plan Editor</i> to see a change in flow plans.          |

At this point, there should be two supplying and two consuming flows.

### 3.7.16 Solving an Overload Problem Manually

To solve an overload problem manually using the *Buffer Plan*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main</i> report.  |
| 2    | Display the <i>Supply Chain Editor</i> .   |
| 3    | Select the <i>Plans</i> tab.   |
| 4    | Select the button next to a plan name. The <i>Plan Editor</i> is displayed.  |
| 5    | Select the <i>Site Plans</i> tab.  |
| 6    | Select the button next to a site plan name. The <i>Site Plan Editor</i> is displayed.  |
| 7    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.   |
| 8    | Select the <i>Buffers</i> tab.   |
| 9    | Select the button next to a buffer plan name. The <i>Buffer Plan Editor</i> is displayed.  |
| 10   | Select a bar in the load profile to open a layout below the bar chart layout which shows the operation plans in that bucket. Do this until the overloaded bucket is located. |

| Step | Action  |
|------|---|
| 11   | Move out one of the operation plans by specifying the Hint field to start after a certain time (for example):<br>"s a 96-06-01 00:00"                         |
| 12   | Select the <i>File / Update Report</i> menu item to update the <i>Buffer Plan</i> . The overload has been removed, i.e. the problem has been solved manually. |

## 3.8 Calendar

### 3.8.1 Description

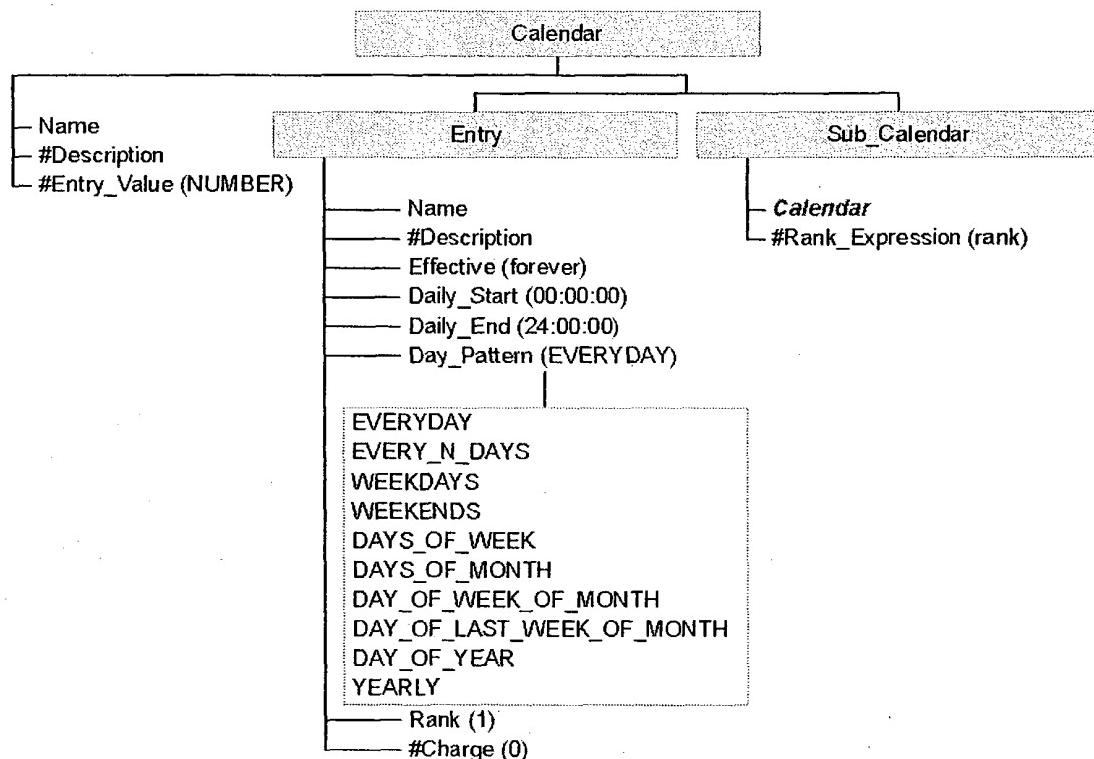
Rhythm calendars allow the user to model information about schedule patterns such as daily work shifts. Calendars that model holiday and maintenance schedules can also be defined. Rhythm uses the information defined in calendars to model things such as efficiency patterns for resources, and quantity supply patterns for buffers. See the *Calendars* section of the *Standard Reports Manual* for more information about using calendars.

### 3.8.2 Calendar Model Structure

FIGURE 47 shows the relationship between the Calendar, Sub\_Calendar, and Calendar Entry models.

FIGURE 47

Calendar Model Structure



### 3.8.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Calendar* report.

Calendar is an independent (top-level) model

Submodels: Calendar\_Entry, Sub\_Calendar

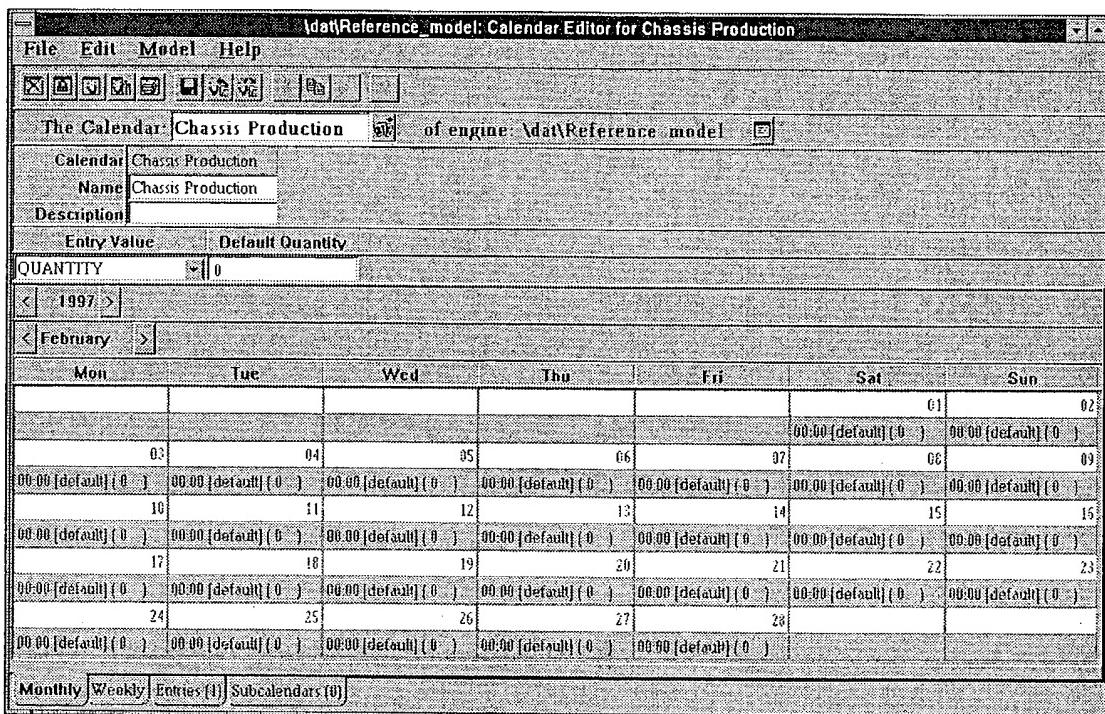
### 3.8.4 Calendar Editor

Calendar information is accessed from the *Supply Chain Editor*. To displays a list of calendars and summary information about each calendar, select the *Calendars* tab in the *Supply Chain Editor*. The summary information includes things such as the number of sub-calendars and calendar entries for each calendar, and a description of the calendar.

To display a particular calendar, select the button next to the calendar name. The *Calendar Editor* displays. See FIGURE 48.

FIGURE 48

Calendar Editor - Monthly Layout



The *Calendar Editor* shows information about the selected calendar such as the name and description, and the number of entries and subcalendars. From here a user can choose to display the *Calendar Entry Editor* to view and edit information about particular calendar entries. The *Calendar Editor* also displays information about any subcalendars used by this calendar.

When the *Calendar Editor* is selected, it displays the calendar for the current year and month. To view other years or months, select the < and > symbols next to the year or month. (< displays previous years or months, and > displays future years or months.)

### 3.8.5 Entry Value

Calendars model things such as efficiency patterns for resources, and quantity supply patterns for buffers. The calendar entry value specifies which type of value this calendar models. The possible entry values and how they are used are as follows:

- NUMBER - a percentage that is used to model efficiencies. For example, efficiencies may vary on different shifts, and this can be defined by specifying 100% for one shift and possibly 80% for another. This can also be used to model a change in efficiency when new equipment is introduced. A user might specify 50% initially for a specified time period, and change the percentage over time until it reaches 100%.
- QUANTITY - a specific quantity, used to model changes in things such as supplies to a buffer. If a raw material buffer receives a supply of 5,000 every two weeks, specify that in a calendar using QUANTITY.
- NUMBER\_QUANTITY - used when a calendar needs to model numbers and quantities.
- SYMBOL - a symbol that may represent something such as a set-up. For example, this entry is used to model a situation in which only certain set-ups are allowed during specified periods of times and dates.
- TIME - a time that is used to model a situation such as a fixed amount of time for an operation, but the time required for the operation may vary over time. For example, the amount of time required for warm-up of a resource may be shorter during the summer than during the winter. The TIME entry is used to specify different values for the summer months and the winter months.

*Default <Number>* - this field displays the default value that is used on any day or time when no particular calendar entry is specified. The name of this field changes depending on the *Entry Value* of the calendar. The calendar in FIGURE 48 has an *Entry Value* of NUMBER, so this field is *Default Number*. If the *Entry Value* of a calendar is *Quantity*, this field is *Default Quantity*, and so on for other entry values.

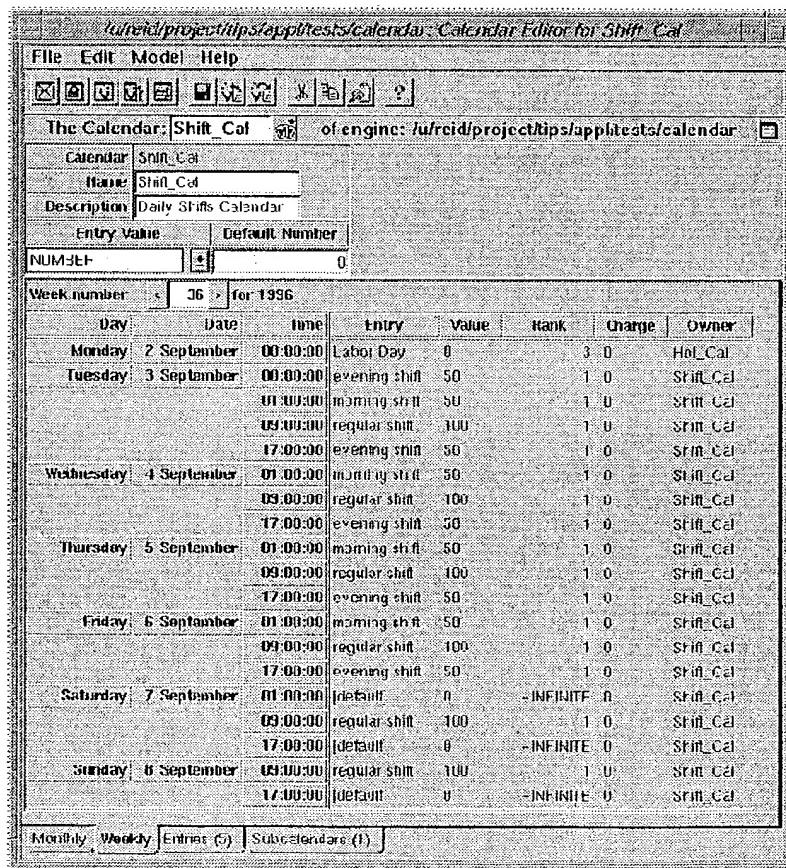
### 3.8.6 Calendar Tabs and Layouts

The *Calendar Editor* has four tabbed layouts. The four tabs and the information on each layout are:

- **Monthly** - The monthly layout for the current month and year. See FIGURE 48. Each day in the monthly layout of a calendar lists the calendar entries that are effective on that day.
- **Weekly** - The weekly layout for the current week and month. See FIGURE 49. The weekly calendar layout displays additional calendar entry information, including the time during which the entry is in effect, the rank of the entry, and the charge (if any).
- **Entries** - The tab displays the number of entries for the calendar, and the layout displays a list of the entries. See FIGURE 50.
- **Subcalendars** - The tab displays the number of subcalendars for the calendar, and the layout displays a list of the subcalendars.

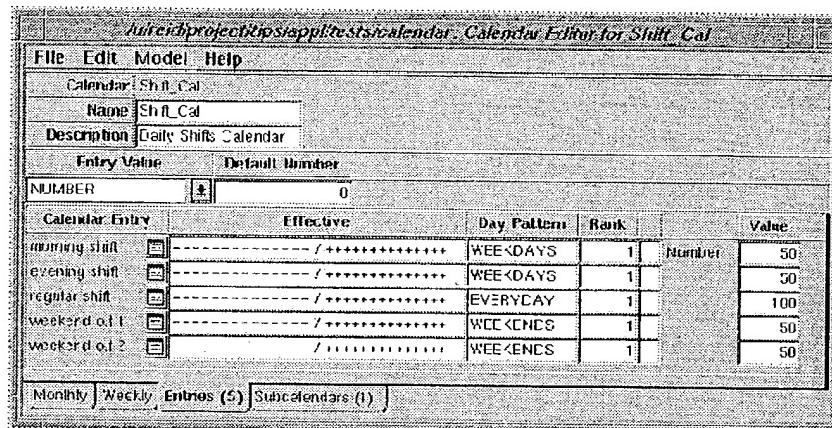
**FIGURE 49**

Calendar Editor - Weekly Layout



**FIGURE 50**

Calendar Editor - Entries Layout



The *Entries* layout lists each *Calendar Entry*, the *Effective* dates, the *Day Pattern*, the *Rank*, the entry type, and the entry *Value*. Select the button next to an entry to display the *Calendar Entry Editor*.

The *Subcalendars* layout lists all subcalendars used by this calendar. Select the button next to a subcalendar to display the subcalendar.

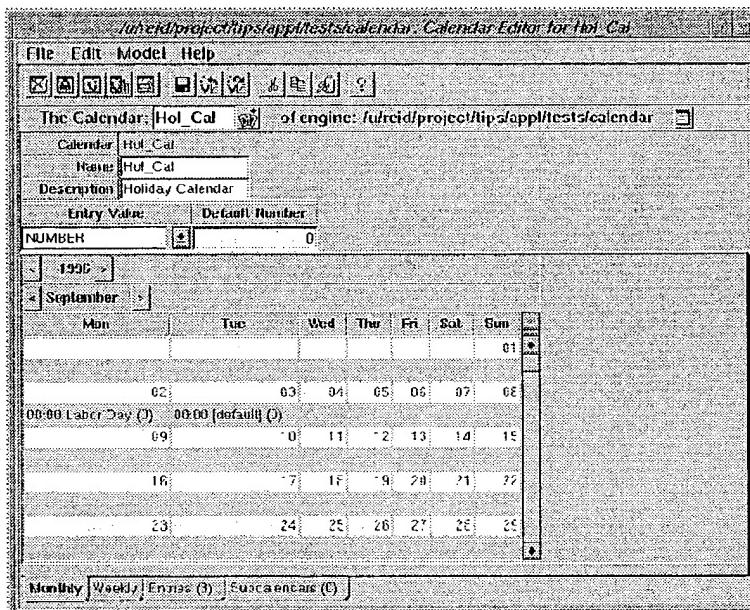
### 3.8.7 Subcalendars

Subcalendars are separate calendars that have modeling information used by a top level calendar. In a subcalendar the user can specify calendar information that is used by several top level calendars, and avoid the duplicate effort of entering this information a number of times. These calendars can specify information about things such as holidays and regularly scheduled maintenance dates. Subcalendars simplify the task of modeling events that effect efficiency and production.

To view a subcalendar, first select the Subcalendars tab to display a list of subcalendars. Then select the button next to the subcalendar name. FIGURE 51 shows the Holidays subcalendar used by the Shifts calendar.

FIGURE 51

Calendar Editor - Holidays Calendar



The month of July is displayed in FIGURE 51, to show a month that has a holiday entry. A subcalendar is defined the same as a calendar, but is used with another, top level calendar. See the *Subcalendar* section in this manual for a description of subcalendars.

### 3.8.8 Calendar Entries

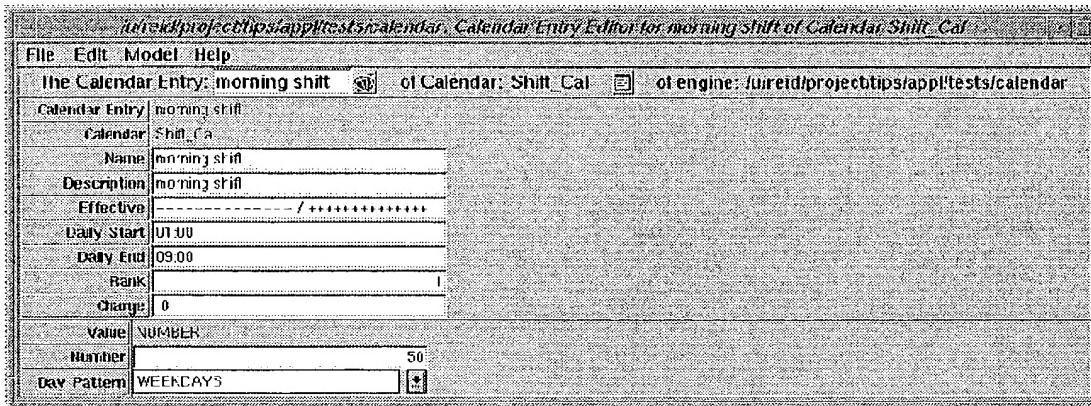
Calendar entries describe the features of a particular item in a calendar. A calendar entry includes things such as the dates and times for which the entry is effective, the rank of the entry (used when entries overlap), and the day pattern.

To display a list of calendar entries for a calendar, first select the Entries tab. Then select the button next to the desired entry. FIGURE 50 shows the *Calendar Editor* with a list of calendar entries displayed.

FIGURE 52 shows the *Calendar Entry Editor* for the morning shift entry of the Shifts calendar.

**FIGURE 52**

Calendar Entry Editor - Morning Shift Entry of Shifts Calendar



See the *Calendar Entry* section in this manual for a description of calendar entries and the *Calendar Entry Editor*.

### 3.8.9 Displaying a Calendar

To display a *Calendar*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Calendars</i> from the list of <i>Domains</i> .                        |
| 4    | Select <i>Calendar Editor</i> from the list of Reports/Activities for Calendars. |
| 5    | Click <i>Display Report</i> . The <i>Calendar Editor</i> displays.               |
| 6    | (To add a new calendar, select the <i>Model/New</i> menu item).                  |

### 3.8.10 Deleting a Calendar

To delete a *Calendar*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Calendars</i> from the list of <i>Domains</i> .                        |
| 4    | Select <i>Calendar Editor</i> from the list of Reports/Activities for Calendars. |
| 5    | Click <i>Display Report</i> . The <i>Calendar Editor</i> displays.               |
| 6    | Select a calendar name.  |
| 7    | Select <i>Model/Delete</i> . A confirmation box is displayed.                    |
| 8    | Click on <i>Delete</i> to delete the selected calendar.                          |

A calendar can only be deleted if it is not currently used with Rhythm. If the calendar is tied to any item such as a resource or buffer, it cannot be deleted. If a calendar is specified as a subcalendar for another calendar, it cannot be deleted.

## **3.9 Calendar Entry**

---

### **3.9.1 Description**

Calendar entries describe the features of a particular item in a calendar. A calendar entry includes things such as the dates and times for which the entry is effective, the rank of the entry (used when entries overlap), and the day pattern.

### **3.9.2 Model Relationships**

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Calendar Entry* report.

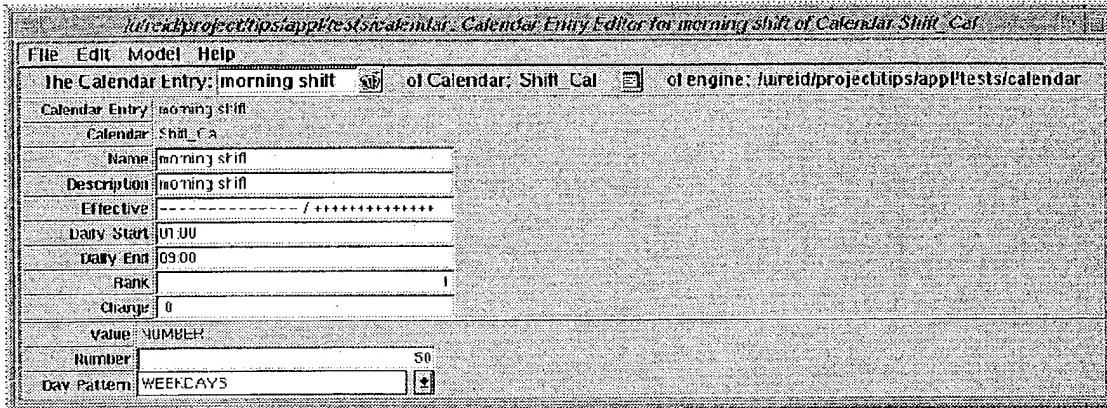
Parent Model: Calendar

### 3.9.3 Calendar Entry Editor

FIGURE 53 shows the *Calendar Entry Editor* for the morning shift entry of the Shifts calendar.

FIGURE 53

Calendar Entry



To display a list of calendar entries for a calendar, first select the *Entries* tab. Then select the button next to the desired entry.

The *Calendar Entry Editor* includes the following information:

- *Calendar Entry* - the calendar entry name that appears on the *Calendar Editor*.
- *Calendar* - the name of the calendar for which this entry is defined.
- *Name* - the name of the calendar entry.
- *Description* - a description of the calendar entry.
- *Effective* - the dates during which this entry is effective.
- *Daily Start* - the starting time of day for this entry.
- *Daily End* - the ending time of day for this entry.
- *Rank* - the rank of this entry, used when entries overlap. For example, if a shift entry and a holiday entry occur on the same date, the holiday entry should have a higher rank. This tells Rhythm to use the holiday entry. A rank of -INFINITE means that this is the lowest possible rank. When specifying rank, allow for later adding entries that may rank between existing entries.
- *Charge* - the charge associated with this entry, used for entries such as overtime.
- *Value* - the type of value of this entry, such as Number or Quantity. The type of value is defined on the *Calendar Editor* and is displayed only on the *Calendar Entry Editor*.
- *Number* - this is the actual value related to the above value item. It is titled Number, Quantity, or another value type as selected. This is the number displayed on the calendar editor (for example N:0, N:1).
- *Day Pattern* - the day pattern for this entry, such as weekdays, weekends, or yearly.

### 3.9.4 Calendar Entry Editor - Examples

FIGURE 54 shows the *Calendar Entry Editor* for the weekend overtime entry of the Shifts calendar.

**FIGURE 54**

Calendar Entry Editor - Weekend OverTime Entry of Shifts Calendar

The screenshot shows a software window titled "Calendar Entry Editor for weekend\_o.t.1 of Calendar Shift\_Cal". The window has a menu bar with File, Edit, Model, Help. The main area displays the following data:

|                |                 |
|----------------|-----------------|
| Calendar Entry | weekend_o.t.1   |
| Calendar       | Shift_Cal       |
| Name           | weekend_o.t.1   |
| Description    | weekend_o.t.1   |
| Effective      | - / ++++++----- |
| Daily Start    | 11:00           |
| Daily End      | 09:00           |
| Rank           | 1               |
| Charge         | 200             |
| Value          | NUMBER          |
| Number         | 50              |
| Day Pattern    | WEEKENDS        |

Notice that there is a *Charge* associated with this entry, and the *Day Pattern* is weekends.

FIGURE 55 shows the *Calendar Entry Editor* for the Labor Day entry of the Holidays calendar.

**FIGURE 55**

Calendar Entry Editor - Labor Day Entry of Holidays Calendar

The screenshot shows a software window titled "Calendar Entry Editor for Labor Day of Calendar Hol\_Cal". The window has a menu bar with File, Edit, Model, Help. The main area displays the following data:

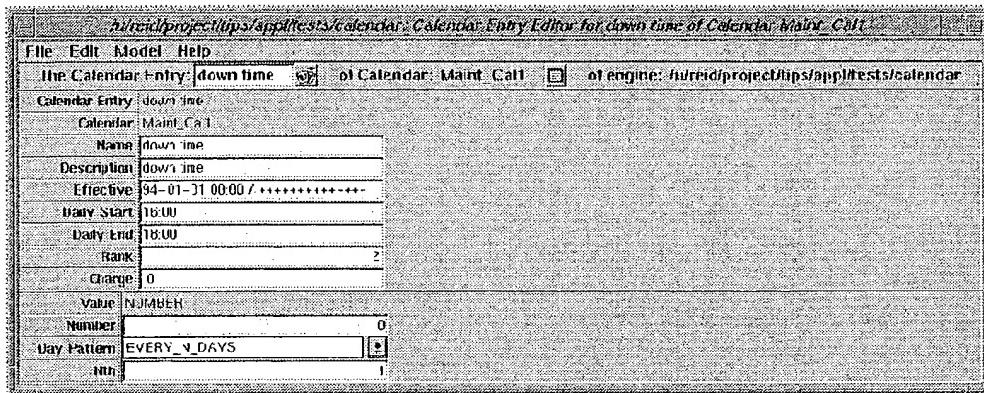
|                |                      |
|----------------|----------------------|
| Calendar Entry | Labor Day            |
| Calendar       | Hol_Cal              |
| Name           | Labor Day            |
| Description    | Labor Day            |
| Effective      | - / +-----*****      |
| Daily Start    | 00:00                |
| Daily End      | 24:00                |
| Rank           | 3                    |
| Charge         | 0                    |
| Value          | NUMBER               |
| Number         | 0                    |
| Day Pattern    | DAY_OF_WEEK_OF_MONTH |
| Day            | 1                    |
| Months         | Sep                  |
| Week           | 1                    |

The - signs in the *Effective* field mean that no specific start date is defined for this entry. + signs indicate that there is not a specified end date. Notice that the *Daily Start* and *Daily End* times define the entire day. The *Rank* is 3, and the *Day Pattern* is DAY\_OF\_WEEK\_OF\_MONTH. There is additional information displayed to define the day pattern, including the *Day*, *Months*, and *Week*.

FIGURE 56 shows yet another calendar entry, for the downtime entry of the maintenance calendar.

FIGURE 56

Calendar Entry Editor - Downtime Entry of Maintenance Calendar



The *Daily Start* time is 16:00:00 and the *Daily End* time is 18:00:00, indicating 2 hours for downtime. This entry has a *Rank* of 2, which is higher than the rank for the morning shift entry, but not as high as the holiday entry. If these three entries all occur on the same date, the holiday entry overrides the other two. When the morning shift and maintenance occur on the same day, the maintenance entry overrides.

The *Day Pattern* is EVERY\_N\_DAYS, and the *Nth* item below it defines the value of N, in this case 1. This indicates that maintenance downtime is scheduled to take place every day.

### 3.9.5 Displaying a Calendar Entry

To display the *Calendar Entry*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Calendars</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Calendar Editor</i> from the list of Reports/Activities for Calendars.   |
| 5    | Click <i>Display Report</i> . The <i>Calendar Editor</i> displays.   |
| 6    | Select the <i>Entries</i> tab. A list of calendar entries is displayed.  |
| 7    | Select the <i>Calendar Entry</i> button next to the desired calendar entry. The <i>Calendar Entry Editor</i> is displayed. |

---

## **3.10 Delivery Request**

---

### **3.10.1 Description**

See the *Request* section in this manual for a description of this report.

## 3.11 Extension Selector

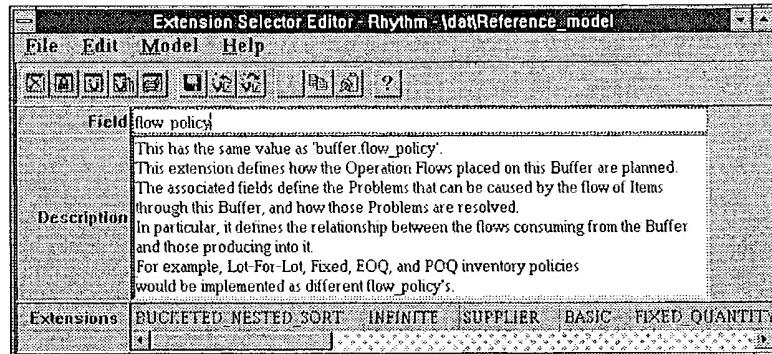
### 3.11.1 Description

The *Extension Selector Editor* allows editing of extension selector fields of a model type. See FIGURE 57.

The *Model Type Editor* allows viewing of any model type. User defined fields can be created in the *Fields* layout of the *Model Type Editor* and then filled out with the *Field Editor*.

FIGURE 57

Extension Selector Editor



### 3.11.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Extension Selector* report.

Parent Model: Model\_Type

### 3.11.3 Displaying an Extension Selector

To display the *Extension Selector Editor*:

| Step | Action  |
|------|---|
| 1    | Select the <i>Model</i> menu to display the <i>Model Types</i> report   |
| 2    | Select a model type button to display the <i>Model Type Editor</i>  |
| 3    | Select the <i>Extension Selectors</i> tab, then select a button to display the <i>Field</i> or <i>Extension Selector Editor</i> |

## 3.12 Field Editor

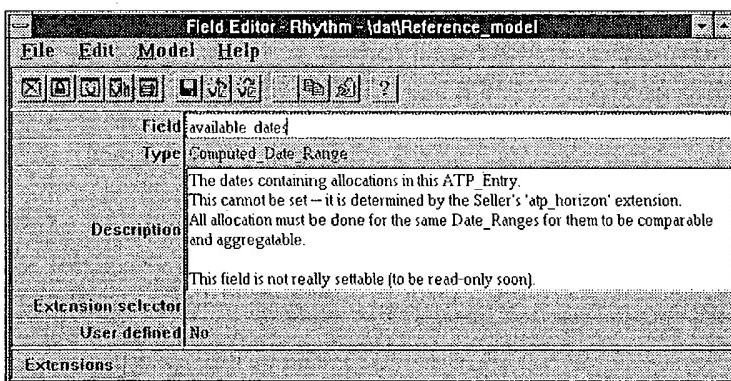
### 3.12.1 Description

The *Field Editor* allows editing *Fields* of a model type. See FIGURE 58.

The *Model Type Editor* allows viewing of any model type. User defined fields can be created in the *Fields* layout of the *Model Type Editor* and then filled out with the *Field Editor*.

**FIGURE 58**

Field Editor



### 3.12.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Field Editor* report.

Parent Model: Model\_Type

### 3.12.3 Editing Fields of a Model

To display the *Field Editor*:

| Step | Action  |
|------|---|
| 1    | Select the <i>Model</i> menu to display the <i>Model Types</i> report                 |
| 2    | Select a model type button to display the <i>Model Type Editor</i>                    |
| 3    | Select the <i>Fields</i> tab, then select a button to display the <i>Field Editor</i> |

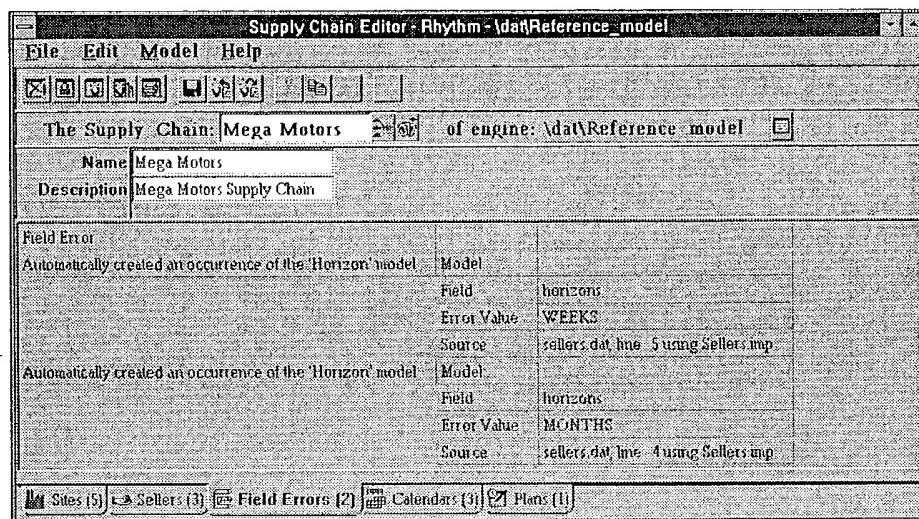
## 3.13 Field Errors

### 3.13.1 Description

*Field Errors* is actually an activity on the *Supply Chain Editor*. *Field Errors* lists all field errors occurring within the specified plan. The *Field Errors* tab lists the name of the supply chain in use and its description. It also lists the Model in which the error is occurring, the specific Field within that model where this error is occurring, the Error Value, and the Source file of the error.

FIGURE 59

Field Errors



#### 3.13.1.1 Viewing Field Errors

To view *Field Errors*, take the following steps:

| Step | Action   |
|------|--|
| 1    | Display <i>Main Explorer</i> report.   |
| 2    | Select plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Field Errors</i> from the list of <i>Reports/Activities for Supply Chains</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Field Errors</i> tab of the <i>Supply Chain Editor</i> displays.  |
| 6    | (To display the field errors for a different supply chain, click the <i>Choose</i> button, and select a supply chain from the list displayed.) |

### 3.14 Flow

#### 3.14.1 Description

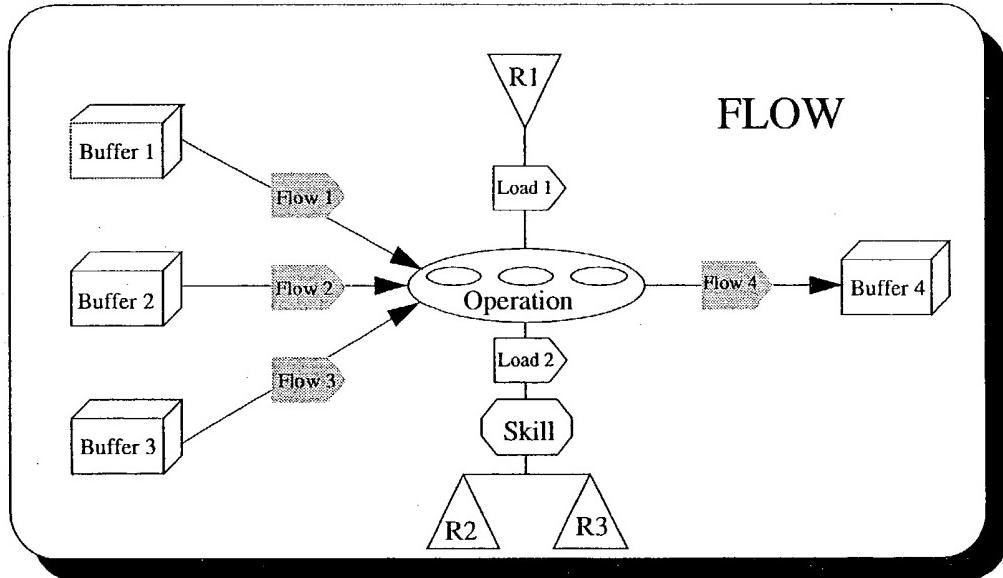
The *Flow* shows the items that are produced or consumed by an operation. It models how material is used by the operation. It connects buffer to operation, whether flowing from the buffer into the operation or flowing out of the operation into the buffer. See FIGURE 60. The *Flow\_Policy* that is defined is a buffer extension.

Flow has an extension named *Usage\_Policy*. The flow defines how an operation consumes or produces an item through this extension. Example *Usage\_Policy* extensions include:

- *Consume\_per*
- *Produce\_per*
- *Consume\_fixed*
- *Produce\_fixed*
- *Produce\_yield*

FIGURE 60

FLO Network Model - Flows

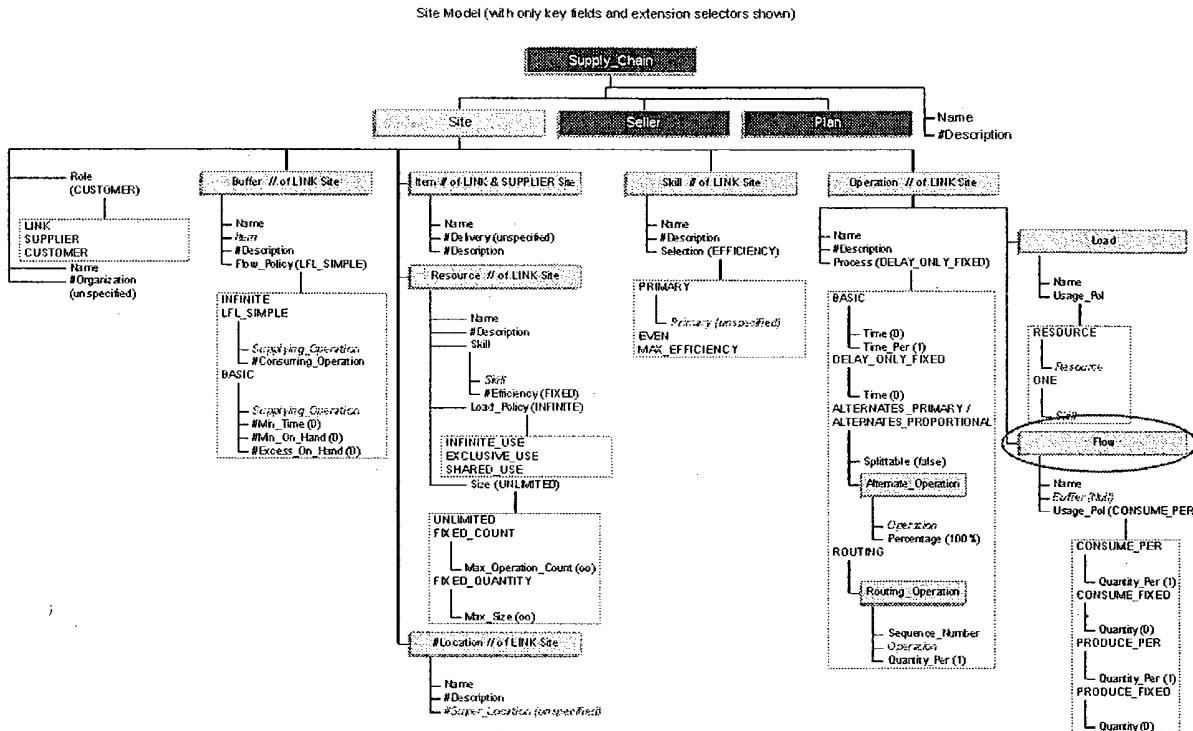


### 3.14.2 Model Structure

FIGURE 61 shows the relationship of the model to its parent model and submodels.

**FIGURE 61**

## Model Structure



### 3.14.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Flow* report.

## Parent Model: Operation

### 3.14.4 Displaying Flow

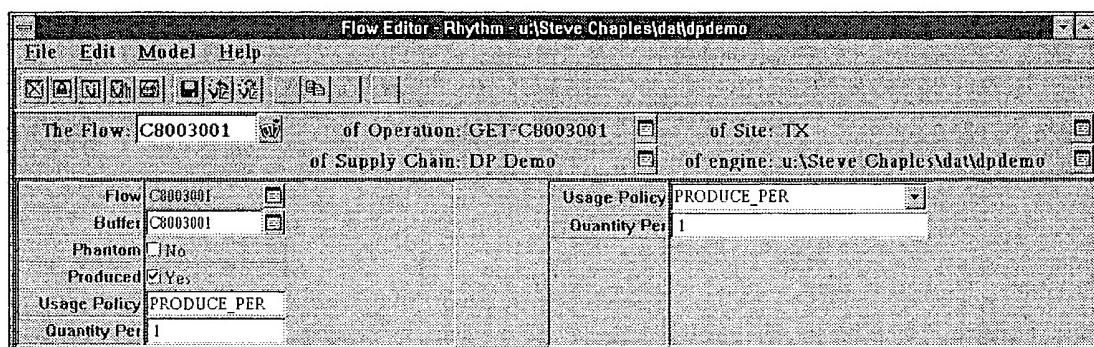
To display the *Flow Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.                     |
| 2    | Select plan of interest.                                     |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> . |

| Step | Action  |
|------|---|
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> .                            |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.  |
| 6    | Select the <i>Sites</i> tab.  |
| 7    | Select the button next to a site name. The <i>Site Editor</i> is displayed.   |
| 8    | Select the <i>Operations</i> tab.   |
| 9    | Select the <i>Edit / Find</i> menu item, and search for the first operation with a process extension of ALTERNATES_PRIMARY. |
| 10   | Select the button next to that operation name. The <i>Operation editor</i> is displayed.                                    |
| 11   | Select the button next to a <i>Flow</i> name. The <i>Flow Editor</i> is displayed. See FIGURE 62.                           |
| 12   | (To add a new flow, select the <i>Model / New</i> menu item.)   |

FIGURE 62

Flow

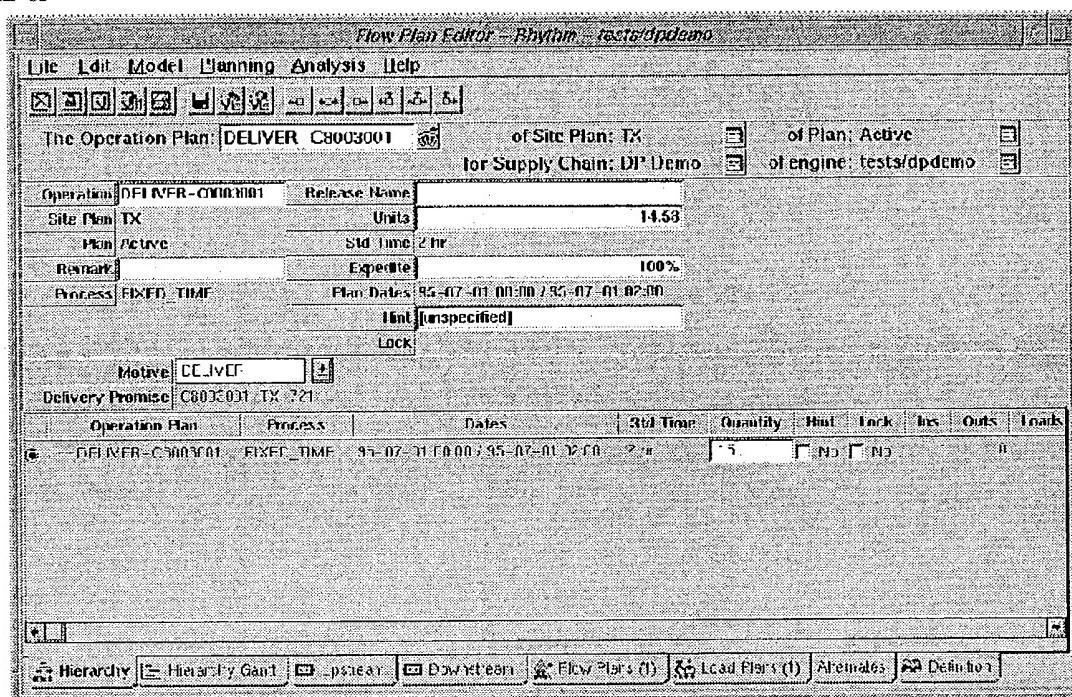


## 3.15 Flow Plan

### 3.15.1 Description

The *Flow Plan* plans for flow of items between buffers and an operation. It specifies the buffers being supplied to or consumed from, and the quantity being consumed / produced. See FIGURE 63.

FIGURE 63



### 3.15.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Flow Plan* report.

Parent Model: Operation\_Plan

Submodels: Lot\_Flow

### 3.15.3 Displaying a Flow Plan

To display the *Flow Plan*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select plan of interest.   |
| 3    | Select <i>Capacity Buffers</i> or <i>Inventory Buffers</i> (in <i>FLO Network</i> tree) from the list of <i>Domains</i> .                |
| 4    | Select <i>Buffers Plan Editor</i> from the list of <i>Reports/Activities for FLO Network</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Buffer Plan Editor</i> displays.  |
| 6    | From the <i>Buffer Plan Editor</i> , select the <i>All Producing Operations</i> tab.   |
| 7    | From the <i>All Producing Operations</i> tab, click the <i>Report</i> button next to an Operation. The <i>Operation Editor</i> displays. |
| 8    | From the <i>Operation Editor</i> , select the button next to a flow plan name. The <i>Flow Plan Editor</i> is displayed.                 |

### 3.15.4 Changing Flow Policy

Changing a buffer's flow policy from INFINITE or FIXED\_QUANTITY to LFL\_SIMPLE produces supplying flow plans to account for all consuming flow plans of the buffer. To test these flow plans:

| Step | Action  |
|------|---|
| 1    | Display the <i>Buffer Plan Editor</i> for a buffer                  |
| 2    | Select the <i>Flow Register</i> tab.                                |
| 3    | Change the buffer's <i>Flow Policy</i> to INFINITE.                 |
| 4    | Update the <i>Buffer Plan Editor</i> to see a change in flow plans  |
| 5    | Change the buffer's <i>Flow Policy</i> to LFL_SIMPLE.               |
| 6    | Update the <i>Buffer Plan Editor</i> to see a change in flow plans. |

At this point, note the number of supplying flows and consuming flows. Consuming flows should be listed by start date, and supplying flows by end date.

### 3.15.5 Changing the Flow Plan Editor

The *Load Plan Editor* and *Operation Plan Editor* are nearly identical to the *Flow Plan Editor*. The only difference is the value that is passed to the report, which is the value being edited. If any changes are made to this report, the *Load Plan Editor* and *Operation Plan Editor* may need to have similar changes.

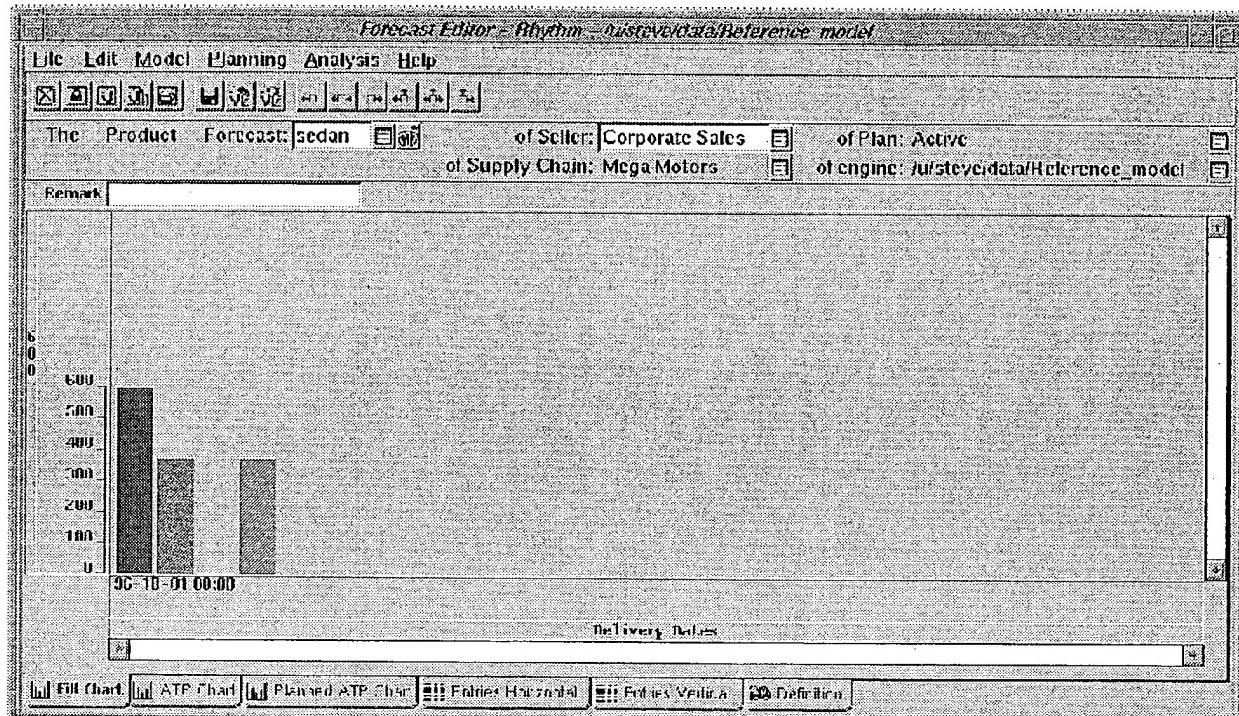
## 3.16 Forecast

### 3.16.1 Description

The *Forecast* models the forecasts and allocations (the master plans) for a product or product group of the seller or its organizations. See FIGURE 64.

FIGURE 64

Forecast Editor



These forecasts form hierarchies that parallel the seller's product group hierarchies. The group forecasts are collections of the individual product forecasts. But the group forecasts can be changed, and the changes are passed down to the individual forecasts.

The individual forecasts represent the detailed master plan for the seller. The group forecasts are essentially a tool for collecting and dividing forecasts.

Note also that allocations are fundamentally performed at the product level, at the individual forecast. Group forecasts cannot be transformed directly into requests on sites. Rather, group forecasts are separated into individual forecasts, and those are broken down into requests on sites.

Finally, note that propagation up to the owner's organizations occurs through the individual forecasts only. The organization seller plan can then aggregate those into its own group forecasts.

In addition to the product group hierarchies, there is an orthogonal hierarchy, the seller organization hierarchy. The product group hierarchies are a tool for a single seller to manipulate the forecasts that he or she owns. As such, the forecasted and committed values in the product group hierarchy are tied directly to one another. Changes are immediately propagated throughout the hierarchies.

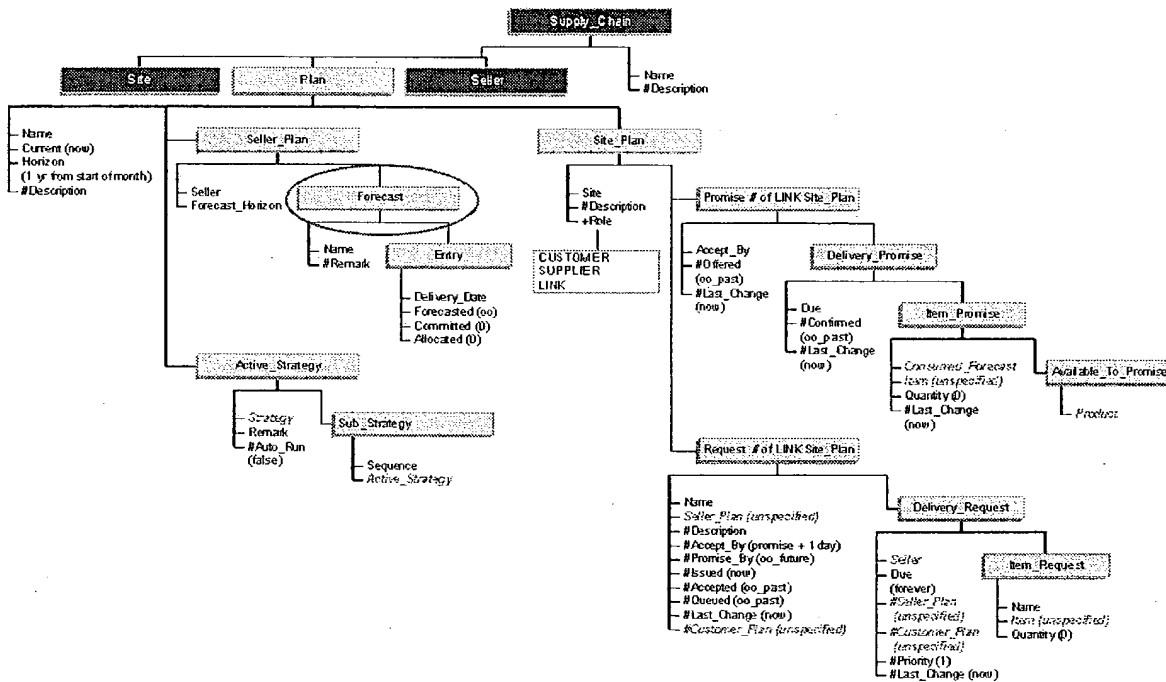
### 3.16.2 Model Structure

FIGURE 65 shows the relationship of the model to its parent model and submodels.

FIGURE 65

Model Structure

Plan Model (with only key fields and extension selectors shown)



### 3.16.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Forecast* report.

Parent Model: Seller\_Plan

Submodels: Forecast\_Entry

### 3.16.4 Forecasting for a Product Group

To display the *Forecast Editor* for a product:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Requests/Promises</i> (in Demand tree) from the list of <i>Domains</i> .   |
| 4    | Select <i>Order Entry</i> or <i>Mass Order Promising</i> from the list of <i>Reports/Activities for Requests/Promises</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Request Editor</i> displays.  |
| 6    | From the <i>Plan Request</i> tab of the <i>Request Editor</i> , click the <i>Report</i> button next <i>Generating Forecast</i> . The <i>Forecast Editor</i> displays. See FIGURE 64 for the <i>Fill Chart</i> .  |
| 7    | In the <i>Seller Plan Editor</i> , select the <i>Planning / Satisfy All Requests</i> menu item. This does the planning, based on what the supply chain said it could do. Commitments are added, but no allocations yet. See FIGURE 66.                   |
| 8    | In the <i>Forecast Editor</i> , select <i>File / Update Report</i> menu item. Select the <i>Planned ATP</i> tab to see that planned ATP has been added. See FIGURE 68. The <i>Fill Chart</i> may be selected to view planned ATP along with commitments. |
| 9    | In the <i>Seller Plan</i> , select the <i>Planning / Promise As Planned</i> menu item. This sends promises back out that match the plan. This produces allocations for the forecast.   |
| 10   | In the <i>Forecast Editor</i> , select <i>File / Update Report</i> menu item. The <i>ATP Chart</i> for the product shows the allocation. See FIGURE 67.  |
| 11   | Introduce customer orders for this product by selecting the <i>Main / File / Import</i> menu item.   |
| 12   | Repeat the planning steps.   |
| 13   | The <i>File / Update Report</i> menu item updates the report for the ATP for this product and shows that the allocation does not change.   |

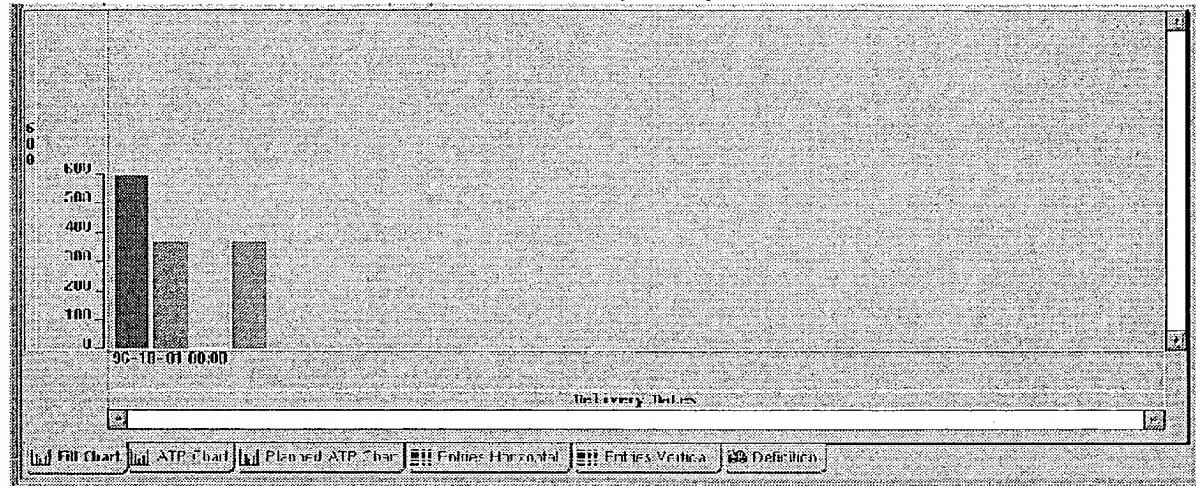
### 3.16.5 Fill Chart

The Fill Chart (FIGURE 66) shows three bars in each time bucket over the forecast horizon. The bars show:

- raw forecasted demand
- committed forecast
- quantity planned (to be allocated if promised)

FIGURE 66

Forecast - Fill Chart after Satisfy All Requests



### 3.16.6 ATP Chart

The ATP Chart (FIGURE 67) can display four bars in each time bucket over the forecast horizon. The bars show:

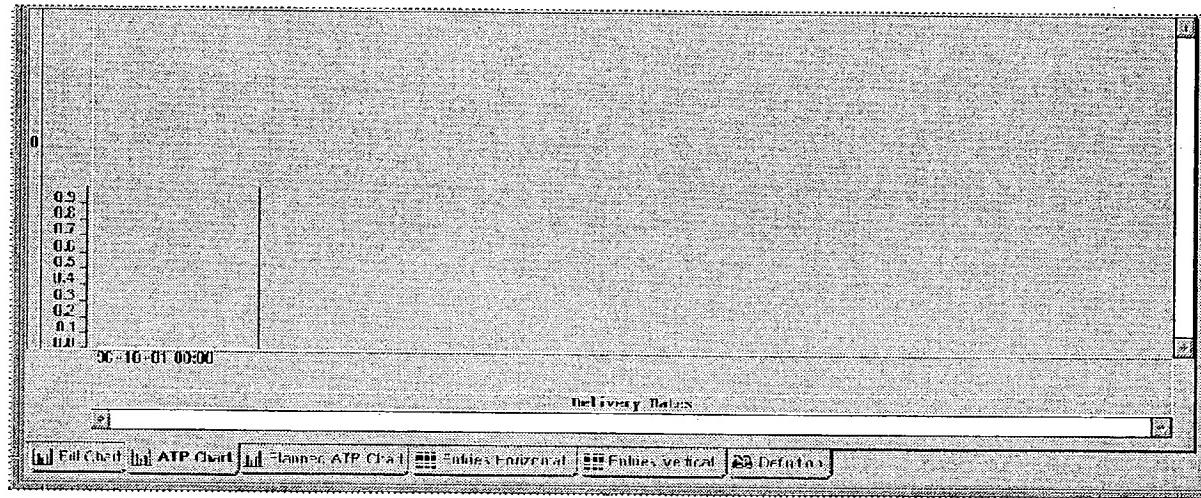
- quantity allocated
- quantity allocated to the members
- allocation to actual orders
- net ATP

All quantities shown in the bar charts are converted to the unit of the product or product group.

Selecting any bar generally selects that bucket in the outer report. Typically, this is used to show the corresponding bucket in either the seller or product hierarchies of the product or product group.

**FIGURE 67**

Allocations for the Forecast



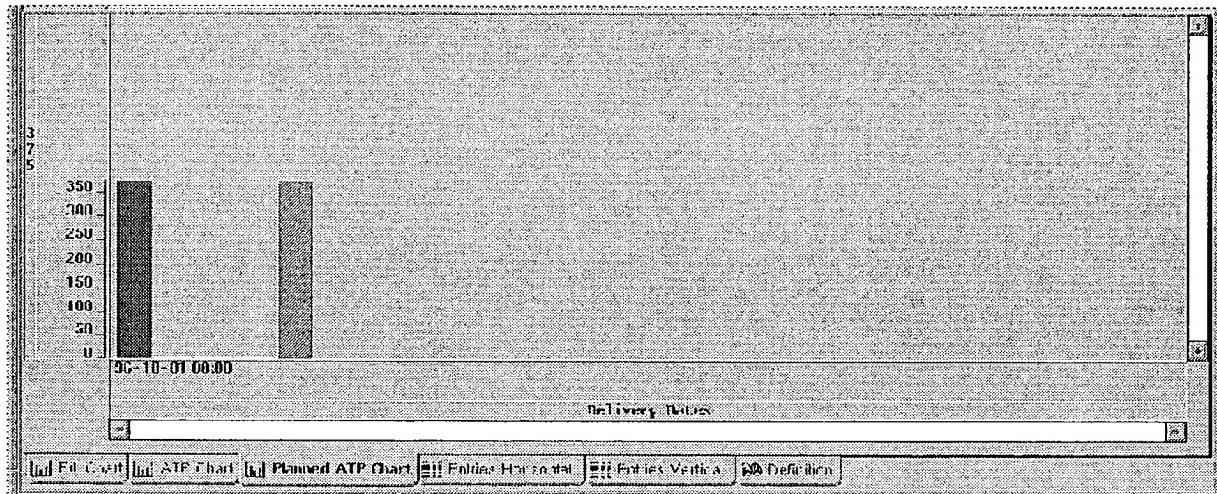
### 3.16.7 Planned ATP Chart

The Planned ATP Chart (FIGURE 68) can display five bars in each time bucket over the forecast horizon. The bars show:

- planned allocation
- planned allocation to the members
- allocation to actual orders
- net planned ATP
- currently allocated ATP

**FIGURE 68**

Planned ATP



### **3.16.8 ATP**

Available To Promise (ATP) is the uncommitted portion of a company's inventory or planned production. The ATP Chart and ATP table show the promises from Available To Promise for a seller. For each forecast in matching forecasts, ATP is sought that satisfies the item request that is put in one Available To Promise model. If there is not enough ATP to cover the request on-time (forecast request, not an actual request), then additional Available To Promise models are created for the next available dates, until the maximum quantity is covered, or there is no more ATP. That is repeated for each forecast in matching forecasts so that all options that are available to promise are listed. In that way, the best option considering price, timing, delivery lead time, and configuration can be selected.

### 3.16.9 Generating Forecast Consumption

To generate forecast consumption (See FIGURE 69):

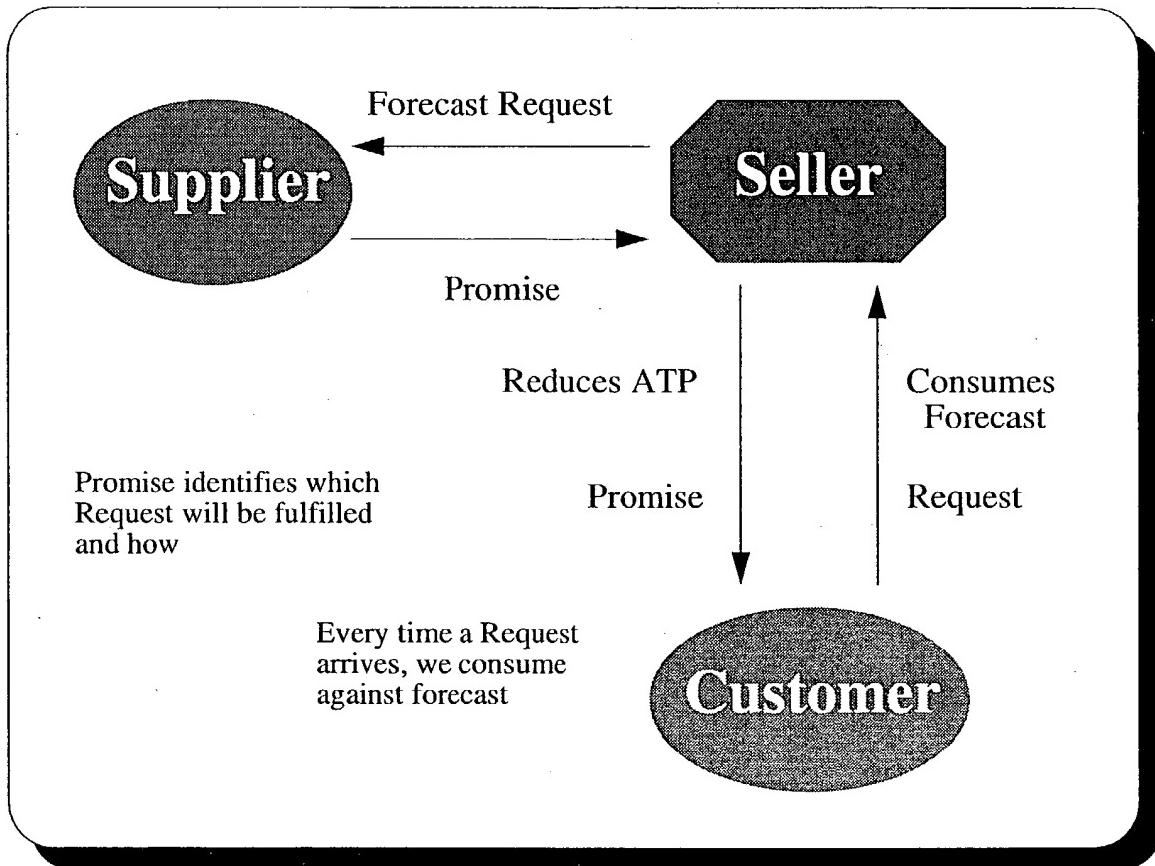
| Step | Action  |
|------|---|
| 1    | Select the <i>Planning</i> menu in the <i>Site Plan Editor</i>  |
| 2    | Select the <i>Satisfy All Requests</i> menu item to plan the forecast requests read in  |
| 3    | Select the <i>Promise As Planned</i> menu item  |
| 4    | Select the <i>Satisfy All Requests</i> menu item - does the planning, based on what the supply chain said it could do. Commitments, but no allocations yet. |
| 5    | Select the <i>Promise As Planned</i> menu item - send promises back out that match the plan. There should then be some allocations.                         |
| 6    | Select the <i>Items</i> tab in the <i>Site Plan Editor</i>  |
| 7    | Select an <i>Item</i> , its <i>Buffer</i> , <i>Buffer Plan</i> , then <i>Flow Plan</i>  |

This buffer is LFL\_SIMPLE with starting on-hand of zero. The bottom of the report shows the inventory. Check the sourcing report to see if each operation plan is repeated, which might lead to excess inventory.

FIGURE 69 shows the relationship between the supplier, the seller, and the customer with regards to forecast consumption.

FIGURE 69

Forecast Consumption



### 3.16.10 Entries Horizontal

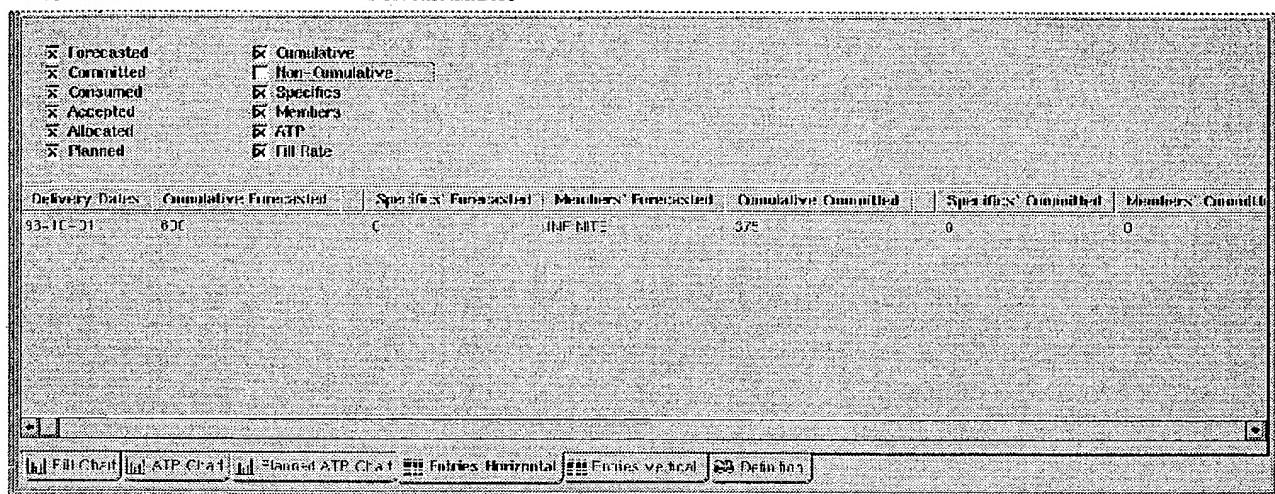
*Entries Horizontal* might show forecast entries (estimate of future demand) for a product at a warehouse seller level. The seller organization may be flat (e.g. 4 warehouses). When forecast is coming in at a product group level, the forecast is read, and the forecast request is generated. Then the forecast entry should be changed so as to specify forecast at individual product levels. See FIGURE 70.



Forecast requests for a product are generated only for the seller plan of the seller that owns the product.

**FIGURE 70**

Forecast Entries



Setting a group forecast entry's forecasted or committed fields to a new value will set the same field of each of its sub\_forecasts such that the sum of those sub\_forecasts equals the value set there. The property that the group forecast's values are the sums of its sub\_forecasts is always maintained. In that sense, a group forecast is just a tool for seeing the aggregated total and for adjusting a group of forecast values evenly.

Setting a forecast entry field immediately propagates the change up to any group forecasts that contain it, and immediately disaggregates the change down to any sub\_forecasts. How the change is disaggregated depends upon the value of the *use\_std\_split* field. If false, then the change is split out in the same proportions that the sub\_forecasts currently have (thereby not changing the percentage splits). If true, then the change is split according to the *std\_splits* in the product definitions, regardless of the current distribution.

### 3.16.11 Entries Vertical

*Entries Vertical* displays the same information as *Entries Horizontal*, only vertically. See FIGURE 71.

**FIGURE 71****Entries Vertical**

### 3.16.11.1 Entries Horizontal/Vertical Tab Components

Table 16 lists each component of the *Entries Horizontal* and *Entries Vertical* tabs.

**Table 16: Tab Components: Entries Horizontal/Vertical**

| Component      | Description   |
|----------------|---|
| Forecasted     | The quantity of this product or product group that the seller believes can be sold for the specified delivery dates. This is market potential. This may be an aggressive forecast, but it is NOT commitment. Rather, it is an upper bound on what can be committed.   |
| Committed      | The quantity of this product or product group that the seller is willing to commit to selling for the specified delivery dates. This could also be called "requested ATP". It is the quantity that will be allocated as available_to_promise for this particular seller as long as it is feasible to produce. |
| Consumed       | The total quantity of the product for which actual promises have been made for the specified delivery dates, consuming the forecast entry's allocation.   |
| Accepted       | The total quantity of the product for which promises have been accepted for the specified delivery dates.   |
| Allocated      | The quantity of the product for which promises have been allocated to this seller for the specified delivery dates.   |
| Planned        | The quantity of this product or product group that is currently planned to be delivered. This is an <i>unpromised</i> or <i>what-if</i> variation of <i>allocated</i> .   |
| Cumulative     | The sum of forecasts for each Forecast Entry from the first one to this one. This quantity is converted to the unit of the product or product group.  |
| Non-Cumulative | The sum of forecasts for this particular Forecast Entry. This quantity is converted to the unit of the product or product group.  |
| Specifics      | The sum of the forecasted quantities from the forecasts for this Product's specific products during these delivery dates. This will be <i>zero</i> if this Group forecast or this Product is not a generic product.   |
| Members        | The sum of the forecasted quantities from member forecasts for this product during these delivery dates. This will be <i>zero</i> if this Seller has no members.  |
| ATP            | The uncommitted portion of inventory or planned production for the product being sold by this seller.   |
| Fill Rate      | The ratio of the amount of product the plan has reserved for the requestor (allocated) versus the amount of product the requestor has told the planner he expects to sell (committed).  |

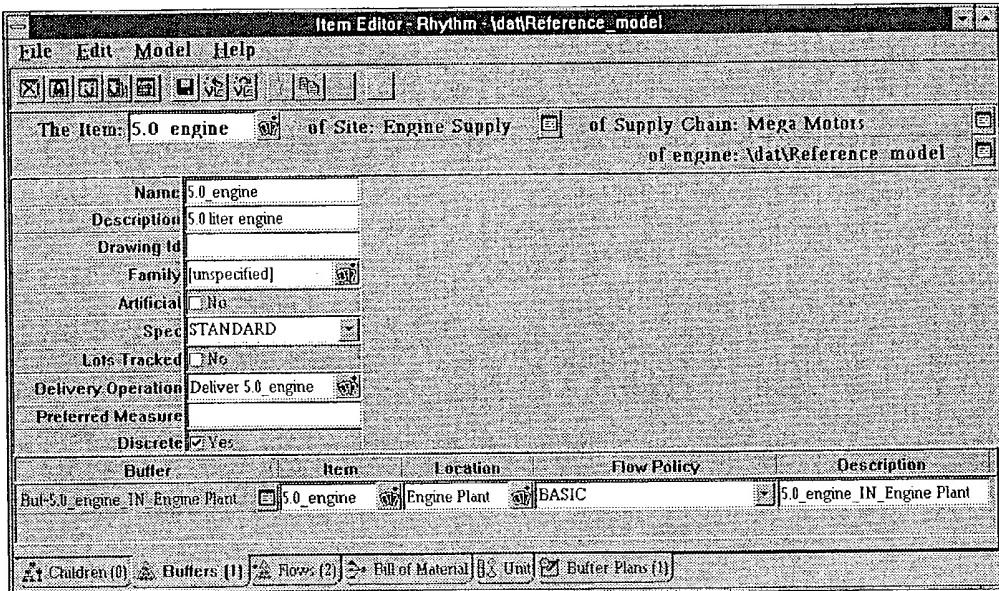
### 3.17 Item

#### 3.17.1 Description

The *Item Editor* models a kind of material, part, component, subassembly, assembly, or good which has particular characteristics that define how it can be built, stored, processed, or used. See FIGURE 72.

FIGURE 72

Item

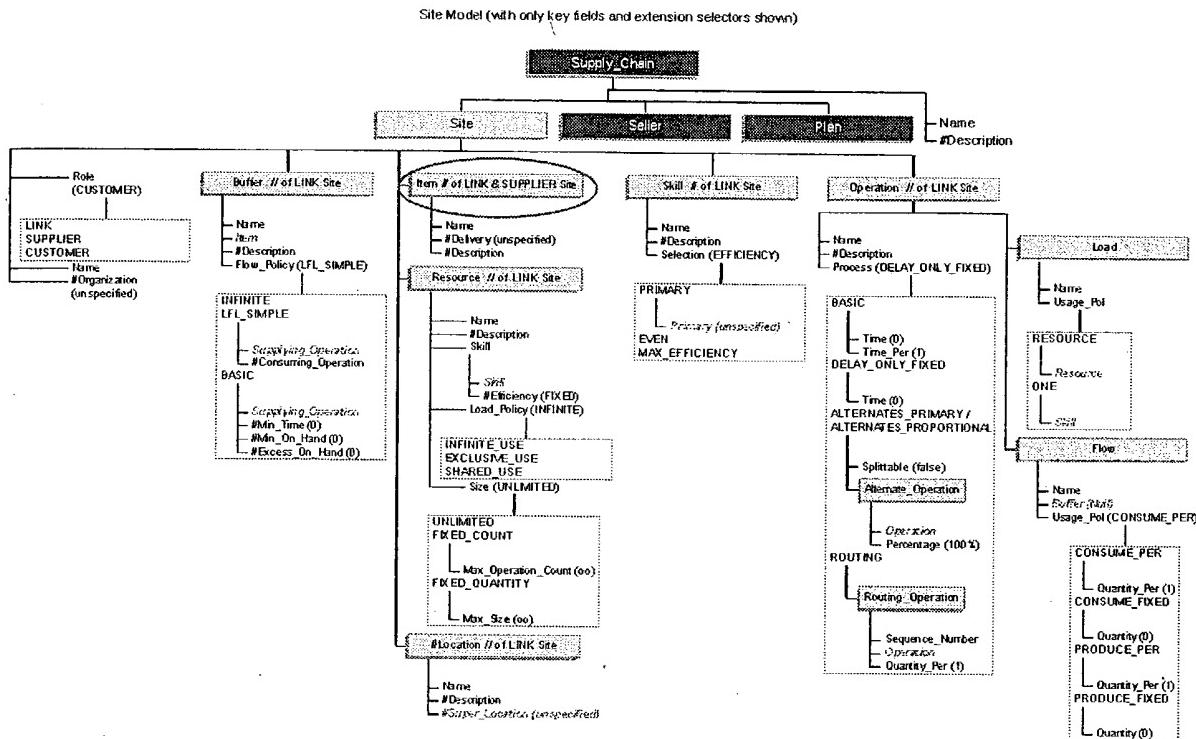


### 3.17.2 Model Structure

FIGURE 73 shows the relationship of the model to its parent model and submodels.

FIGURE 73

Model Structure



### 3.17.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Item* report.

Parent Model: Site

### 3.17.4 Displaying an Item

To display the *Item Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .  |
| 4    | Select the <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> .              |
| 5    | From the <i>Supply Chain Editor</i> , select the button next to a site name. The <i>Site Editor</i> is displayed. |
| 6    | Select the <i>Items</i> tab.  |
| 7    | Select the button next to an item name. The <i>Item Editor</i> is displayed.                                      |
| 8    | (To add a new item, select the <i>Model / New</i> menu item.)   |

### 3.18 Item Promise

#### 3.18.1 Description

An *Item Promise* is an agreement to supply/consume a quantity of a particular item. The Date Range within which this quantity should be supplied is given by the delivery promise, which can also coordinate multiple item promises together. See FIGURE 74.

FIGURE 74

Item Promise

The screenshot shows a software interface titled "Rhythm Item Promise Editor for C800501 of Order Promise ORDER-110". The window has a menu bar with "File", "Edit", "Model", and "Help". Below the menu is a toolbar with various icons. The main area contains a table with the following data:

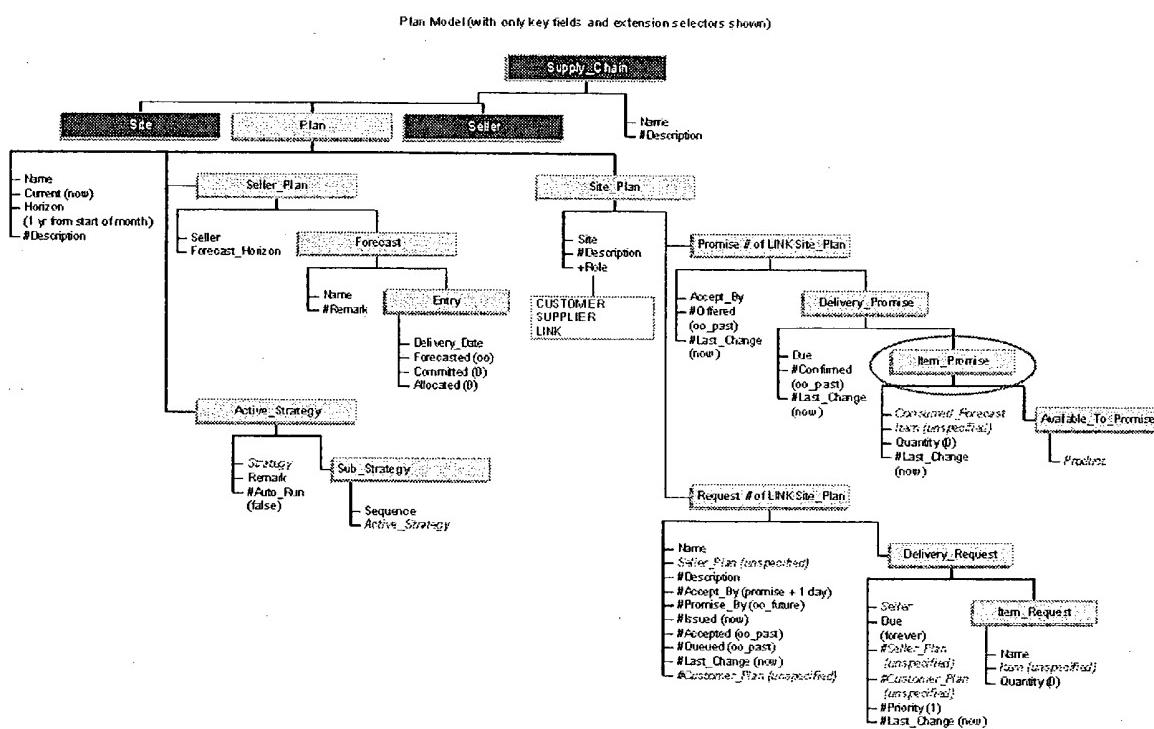
| Promise       | C800501         |
|---------------|-----------------|
| Own Request   | C800501         |
| Order Promise | CR1PP-110       |
| Quantity      | 20              |
| Quantity      | 20              |
| Item          | C800501         |
| Delivery Plan | DELIVER-C800501 |

### 3.18.2 Model Structure

FIGURE 75 shows the relationship of the model to its parent model and submodels.

**FIGURE 75**

**Model Structure**



### 3.18.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Item Promise* report.

Parent Model: *Delivery\_Promise*

Submodels: *Available\_To\_Promise*

### 3.18.4 Displaying Item Promise

To display the *Item Promise Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select <i>Requests/Promises</i> from the list of <i>Domains</i> .   |
| 3    | Select <i>Request Editor</i> from the list of <i>Reports/Activities for Requests/Promises</i> .   |
| 4    | Click <i>Display Report</i> . The <i>Request Editor</i> displays.   |
| 5    | From the <i>Request Editor</i> , click on the item name under <i>Promise (Plan Request tab)</i> . Then select the <i>Model / Editor</i> menu item. The <i>Item Promise Editor</i> is displayed. |

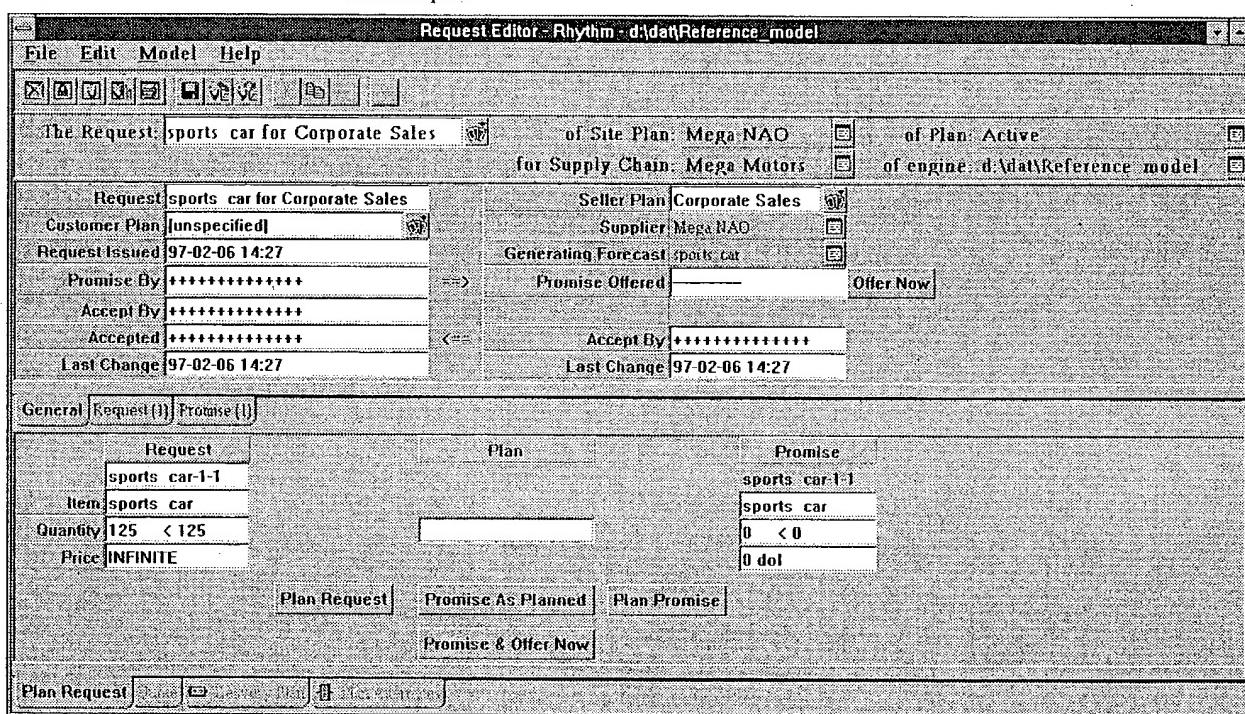
## 3.19 Item Request

### 3.19.1 Description

The *Item Request Editor* (See FIGURE 76) allows for manual order planning (requests are not automatically planned). The manual order planning is done by executing one of the plan to satisfy commands provided in *Site Plan*, *Request*, *Delivery Request*, and *Item Request*. The *Requests* list in the *Site Plan* editor allows the planning of individual requests. The *Delivery Requests* list in the *Request* editor allows the planning of individual delivery requests. *Request*, *Delivery Request*, and *Item Request* together model requests from one site to another. *Promise*, *Delivery Request*, and *Item Promise* together model the commitment of the supplying side to the requesting side.

FIGURE 76

Item Request

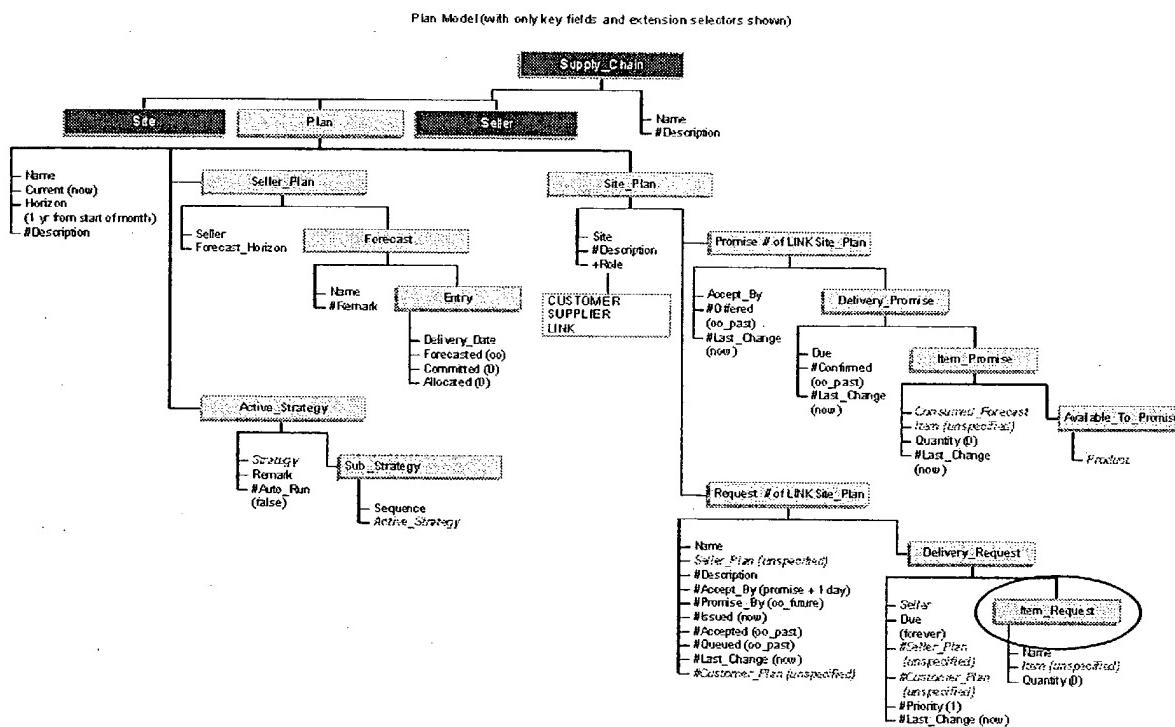


### 3.19.2 Model Structure

FIGURE 77 shows the relationship of the model to its parent model and submodels.

FIGURE 77

Model Structure



### 3.19.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Item Request* report.

Parent Model: *Delivery\_Request*

### 3.19.4 Request / Promise

Demand between sites is placed formally as a request, for which a promise is received. The promising site makes plans to fulfill the promises. The requesting site makes plans assuming the promises will be fulfilled. Requests and promises have expiration dates.

The request / promise logic defines agreements between sites managed by separate groups of decision makers. A promise models a commitment to supply a set of items. Once accepted, the promise represents a commitment by the requestor to accept and consume the supplied items.

See the *Request* section in this manual for a description of this report.

### 3.19.5 Displaying Item Request

To display the *Item Request Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select <i>Plan</i> from the list of <i>Domains</i> .  |
| 3    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> .  |
| 4    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.  |
| 5    | Select the <i>Problems</i> tab.   |
| 6    | Select the <i>Report</i> button next to one of the <i>Details</i> for an <i>Item Request</i> . The <i>Item Request Editor</i> is displayed. |
| 7    | (To add a new item request, select the <i>Model / New</i> menu item. A dialog window is displayed.)   |

## 3.20 Load

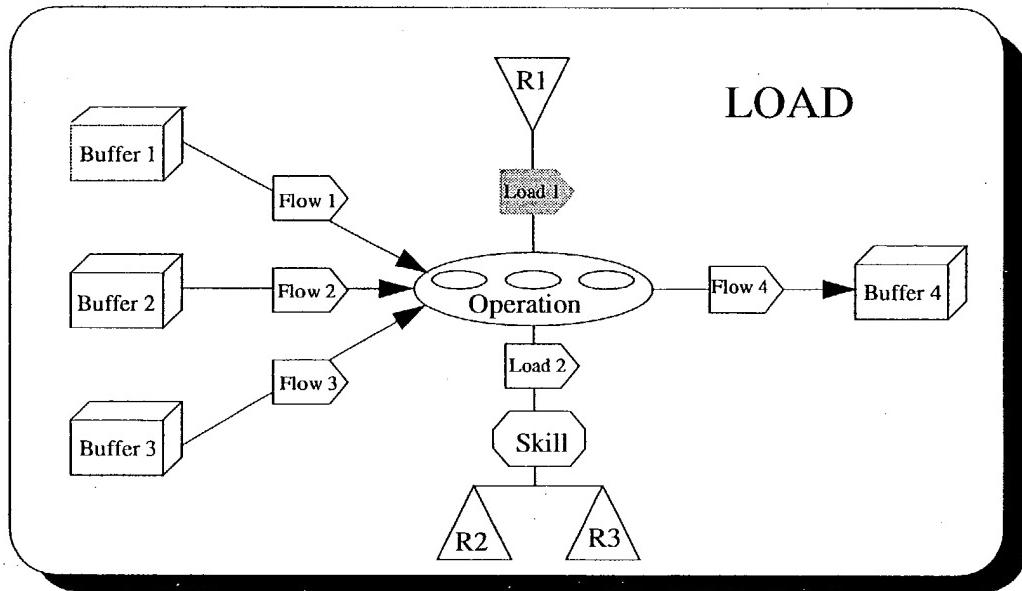
### 3.20.1 Description

The *Load Editor* defines the loads put on resources by an operation. See FIGURE 78. Each load specifies either a resource or a skill needed to perform the operation, the *start\_setup* needed to prepare the resource for the operation, and the *start\_location* of the operation. It also specifies the *end\_setup* and *end\_location* of the resource following the operation.

Usage\_Policy is an extension of load which defines how a given operation uses the skilled resource specified by the load. Operations can have multiple loads. They model simultaneous skilled resources. The Load\_Policy that is defined is a resource extension.

FIGURE 78

FLO Network Model - Load

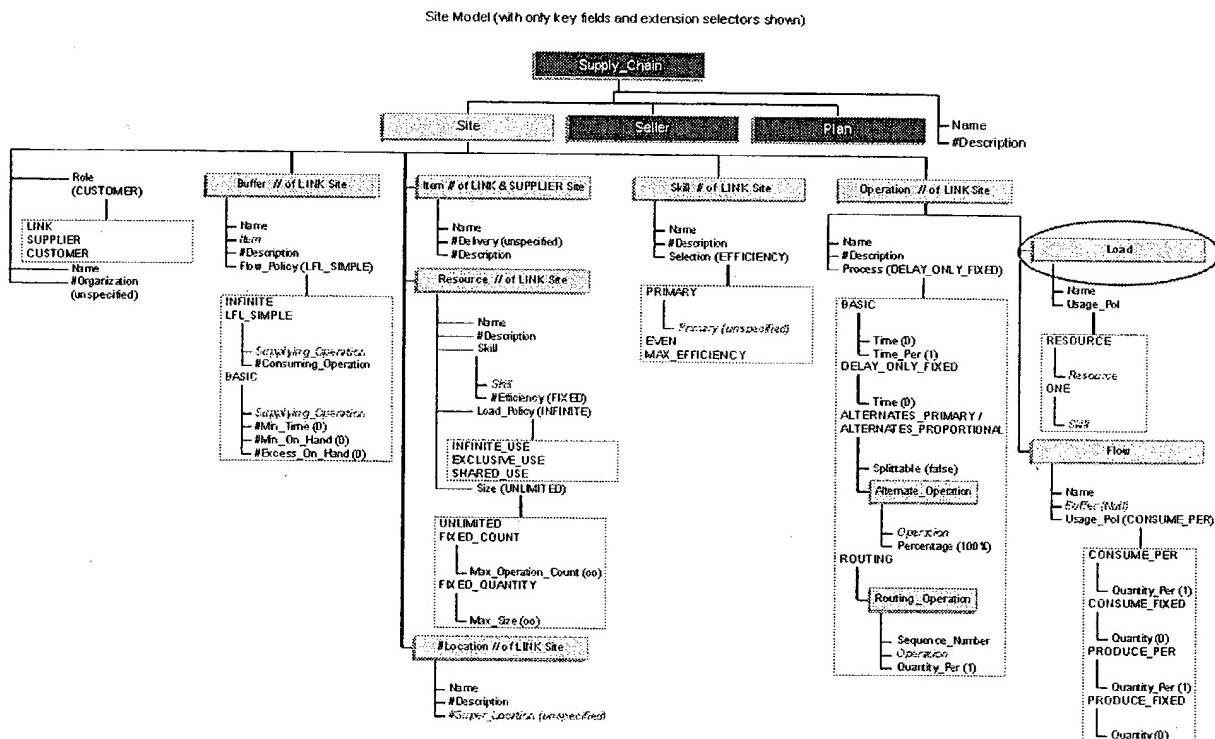


### 3.20.2 Model Structure

FIGURE 79 shows the relationship of the model to its parent model and submodels.

**FIGURE 79**

Model Structure



### 3.20.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Load* report.

Parent Model: Operation

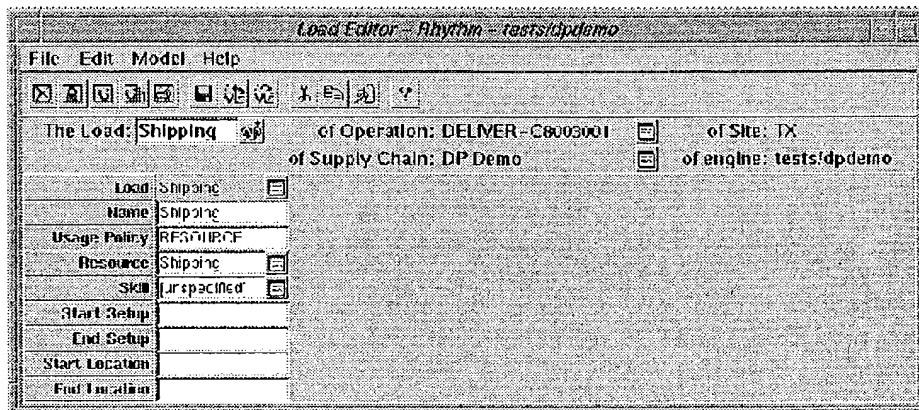
### 3.20.4 Displaying Loads

To display the *Load Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select <i>Resources</i> from the list of <i>Domains</i> .                                     |
| 3    | Select <i>Resource Plan Editor</i> from the list of <i>Reports/Activities for Resources</i> . |
| 4    | Click <i>Display Report</i> . The <i>Resource Plan Editor</i> displays.                       |
| 5    | Select the button next to a resource name. The <i>Resource Editor</i> is displayed.           |
| 6    | Select the <i>Skills</i> tab.   |
| 7    | Select the button next to a skill name. The <i>Skill Editor</i> is displayed.                 |
| 8    | Select the button next to an operation name. The <i>Operation Editor</i> is displayed.        |
| 9    | Select the <i>Loads</i> tab.  |
| 10   | Select the button next to a load name. The <i>Load Editor</i> is displayed. See FIGURE 80.    |
| 11   | (To add a new load, select the <i>Model / New</i> menu item.)                                 |

FIGURE 80

Load



### 3.20.5 Changing to Alternate Resources

Changing to alternate resources is the setting of a Load Plan's Resource Plan. It can be set, and should be able to propagate plan changes.

### 3.20.6 Changing Usage Policy

To change the usage policy:

| Step | Action  |
|------|---|
| 1    | Edit any load (display a <i>Load</i> report).                                       |
| 2    | If the load has an unspecified skill, edit it to any of the available skills.       |
| 3    | If the load has an unspecified resource, edit it to any of the available resources. |

### 3.21 Load Plan

#### 3.21.1 Description

The *Load Plan* specifies the resources to be loaded for the duration of the operation. See FIGURE 81. The *Load Plan Editor* displays information related to the Operation Plan. Most of the load plan information can be changed using the *Load Plan Editor*.

FIGURE 81

Load Plan

| Load     | Reschedule Plan | Turn | Dates                           | Hint          | Hint On       | Lock On       | Alternative   |
|----------|-----------------|------|---------------------------------|---------------|---------------|---------------|---------------|
| Shipping | Shipping        |      | 95-07-01 00:00 / 95-07-01 02:00 | [unspecified] | [unspecified] | [unspecified] | [unspecified] |

#### 3.21.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Load Plan* report.

Parent Model: Operation\_Plan

### 3.21.3 Changing the Load Plan Editor

The *Flow Plan Editor* and *Operation Plan Editor* are nearly identical to the *Load Plan Editor*. The only difference is the value that is passed in to the report, which is the value being edited. If any changes are made to this report, the *Flow Plan Editor* and *Operation Plan Editor* may need to have similar changes.

### 3.21.4 Displaying a Load Plan

To display the *Load Plan Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item.   |
| 7    | Select the <i>Resources</i> tab.   |
| 8    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.  |
| 9    | Select the button next to a load plan name or select one of the Gantt chart bars to display the loads. The <i>Load Plan Editor</i> is displayed. |

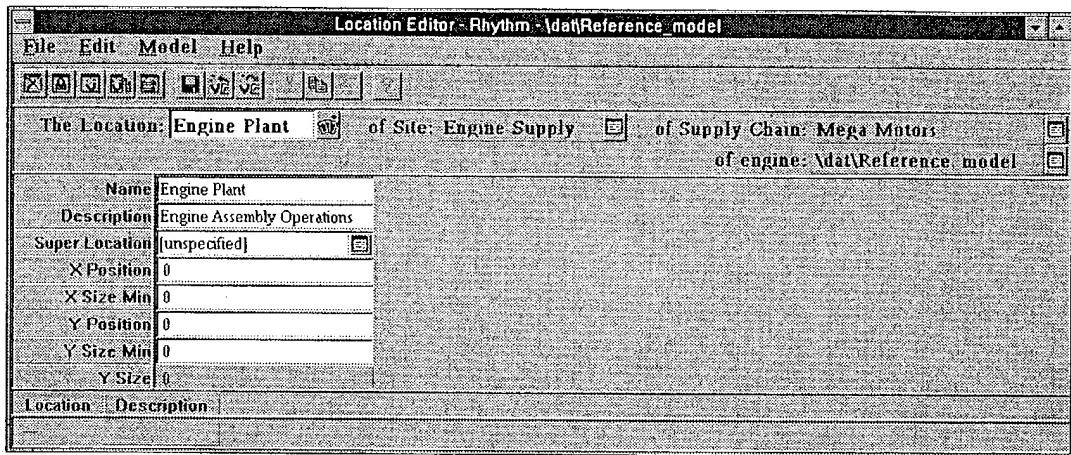
## 3.22 Location

### 3.22.1 Description

The *Location Editor* defines a physical location within a surrounding super location. See FIGURE 82.

FIGURE 82

Location



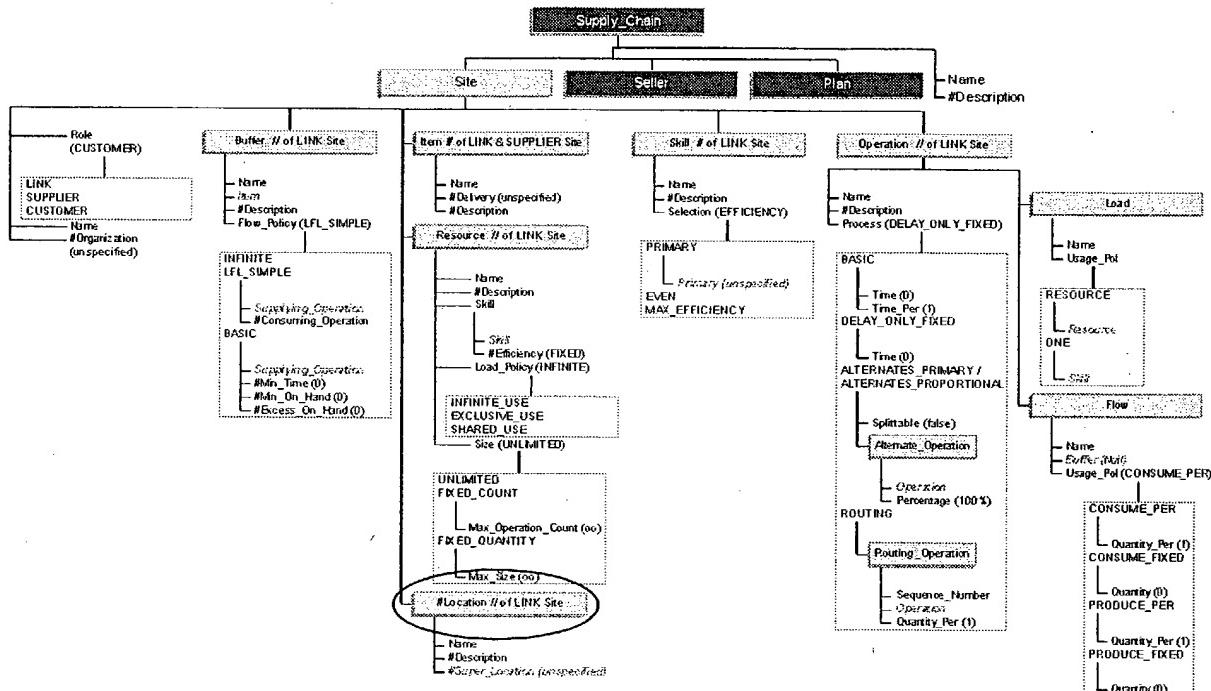
### 3.22.2 Model Structure

FIGURE 83 shows the relationship of the model to its parent model and submodels.

FIGURE 83

Model Structure

Site Model (with only key fields and extension selectors shown)



### 3.22.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Lot* report.

Parent Model: Site

### 3.22.4 Displaying a Location

To display the *Location Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .                                     |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> . |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.                           |
| 6    | Select the button next to a site name. The <i>Site Editor</i> is displayed.                      |
| 7    | Select the <i>Locations</i> tab.   |
| 8    | Select the button next to a location name. The <i>Location Editor</i> is displayed.              |
| 9    | (To add a new location, select the <i>Model / New</i> menu item.)                                |

## 3.23 Lot

### 3.23.1 Description

The *Lot* editor models quantities of items that all have common characteristics. In some industries these items may be called such things as called batches, loads, rolls, coils, ingots, melts, and dye lots. Note that lots are not tracked for standard items. See FIGURE 84. Rhythm keeps track of lot information through lot id, lot size, and part number. Lots are defined by the operation plan that creates the lot. The release\_name of the operation plan is the name of the lot. Thus, lots can report WIP based on lot id, which is the release\_name of the operation plan. Lots can report the quantity that has completed each operation.

FIGURE 84

Lot

The screenshot shows the Rhythm Lot Editor interface. At the top, it displays the title 'Lot Editor' and the path 'Rhythm - i2\karenb\MyTest\_plans\ScreenCaps'. The menu bar includes File, Edit, Model, Planning, Analysis, and Help. Below the menu is a toolbar with various icons. The main area is titled 'The Lot: assembly' and shows its relationship to a Buffer Plan: Buf\_car\_IN\_Delivery, Site Plan: M&Gsite, and Supply Chain: M&Gear. It also indicates the lot is Active. On the left, there's a sidebar with fields for Name (assembly), Remark, Quantity (7C), Configuration (C4), Formed (M), and Supplying Flow (Buf\_car\_IN\_Delivery). The right side contains a table for 'Lot Flow' with two rows:

| Lot Flow | Lot Quantity | Flow Plan           | Flow Quantity | Dates                                 | Operation Plan | Release Name | Hint        |
|----------|--------------|---------------------|---------------|---------------------------------------|----------------|--------------|-------------|
| assembly | 3            | Buf_car_IN_Delivery | -5C           | 97-10-31 00:00:00 - 97-11-01 00:00:00 | Delivery       |              | Unspecified |
| assembly | 51           | Buf_car_ID_D4 very  | -7C           | 97-11-31 00:00:00 - 97-12-01 00:00:00 | Delivery       |              | Unspecified |

At the bottom, there are buttons for 'Flow Plans (P)', 'Update', and 'Close/Save'.

### 3.23.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Lot* report.

Parent Model: Buffer\_Plan

### 3.23.3 Displaying Lots

To display the *Lot Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Capacity Buffers</i> or <i>Inventory Buffers</i> (in <i>FLO Network</i> tree) from the list of <i>Domains</i> . |
| 4    | Select <i>Buffer Plan Editor</i> from the list of <i>Reports/Activities for...</i>  |
| 5    | Click <i>Display Report</i> . The <i>Buffer Plan Editor</i> displays.   |
| 6    | Select the <i>Lots</i> tab.   |
| 7    | Select the button next to a lot name. The <i>Lot Editor</i> is displayed.   |

## 3.24 Mass Order Promising

### 3.24.1 Description

*Mass Order Promising* is an activity of the *Request Editor*. *Mass Order Promising* displays as the *Plan Request* tab of the *Request Editor*. See FIGURE 85. *Mass Order Promising* (the *Request Editor*) allows for manual planning and promising of individual items in a request. The request may be from an actual order or from a forecast. Refer to the section *Plan Request* on page 134 for more information.

**FIGURE 85**

Mass Order Promising: Plan Request Tab of Request Editor

| Request        |            | Plan | Promise |
|----------------|------------|------|---------|
| sports car-1-1 |            |      |         |
| Item           | sports car |      |         |
| Quantity       | 125 < 125  |      |         |
| Price          | INFINITE   |      |         |

**Buttons:**

- Plan Request
- Promise As Planned
- Plan Promise
- Promise & Offer Now

**Bottom Buttons:**

- Plan Request
- Delivery Plan
- Plan Authorization

## 3.25 Model Type

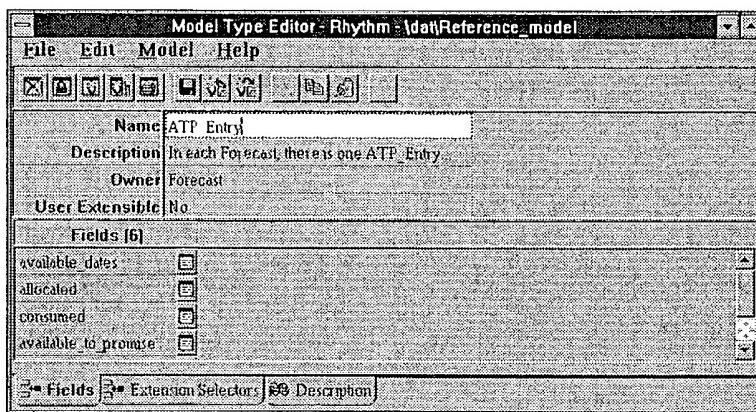
### 3.25.1 Description

The *Model Type Editor* allows viewing of any model type.

User defined fields can be created in the *Fields* layout of this report and then filled out with the *Field Editor*. *Extension Selector* fields of a model type can be edited in the *Extension Selector Editor*.

FIGURE 86

Model Type Editor



### 3.25.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Operation* report.

Parent Model: Plan

Submodels: Field, Extension\_Selector

### 3.25.3 Viewing a Model Type

To display the *Model Type Editor*:

| Step | Action  |
|------|---|
| 1    | Select the <i>Model</i> menu to display the <i>Model Types</i> report   |
| 2    | Select a <i>Model Type</i> button to display the <i>Model Type Editor</i>   |
| 3    | Select the <i>Fields</i> tab, then select a field button to display the <i>Field Editor</i>                           |
| 4    | Select the <i>Extension Selectors</i> tab, then select a field button to display the <i>Extension Selector Editor</i> |
| 5    | (To add a new model type, select the <i>Model / New</i> menu item.)   |

## 3.26 Operation

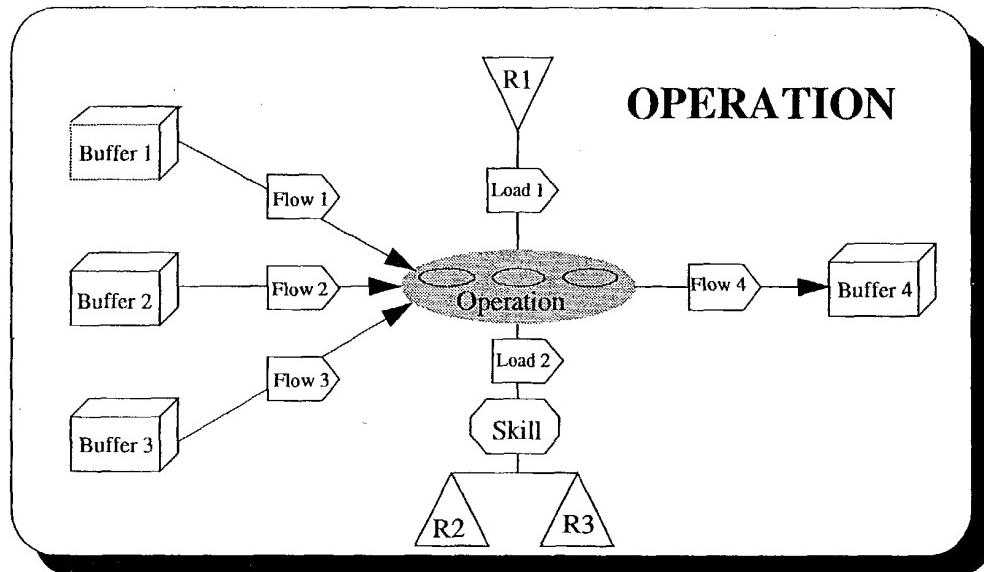
### 3.26.1 Description

An *Operation* models a process, activity, or action that transforms or moves items, resulting in flow into, out of, or between buffers. See FIGURE 87. Operations may require resources with specific skills, modeled by loads. Those resources model the capacity to perform operations. Flows model the flow of items to and from buffers that result from operations.

An operation consumes one or more input items and produces one or more output items. The connecting arc between the buffer and operation is flow. The connecting arc between the skill or resource and the operation is load.

FIGURE 87

FLO Network Model - Operation

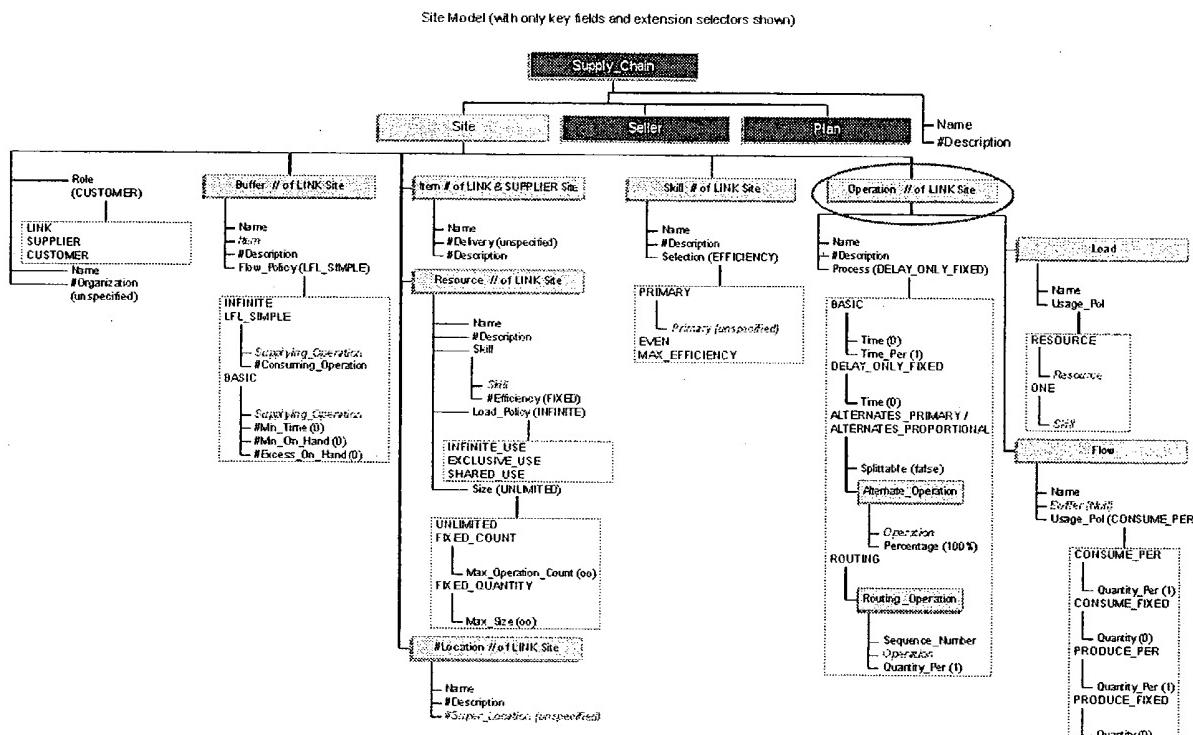


### 3.26.2 Model Structure

FIGURE 88 shows the relationship of the model to its parent model and submodels.

FIGURE 88

Model Structure



### 3.26.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Operation* report.

Parent Model: Site

Submodels: Load, Flow, Operation\_Problem\_Detector, Alternate\_Operation, Routing\_Operation, Effective\_Calendar\_Operation

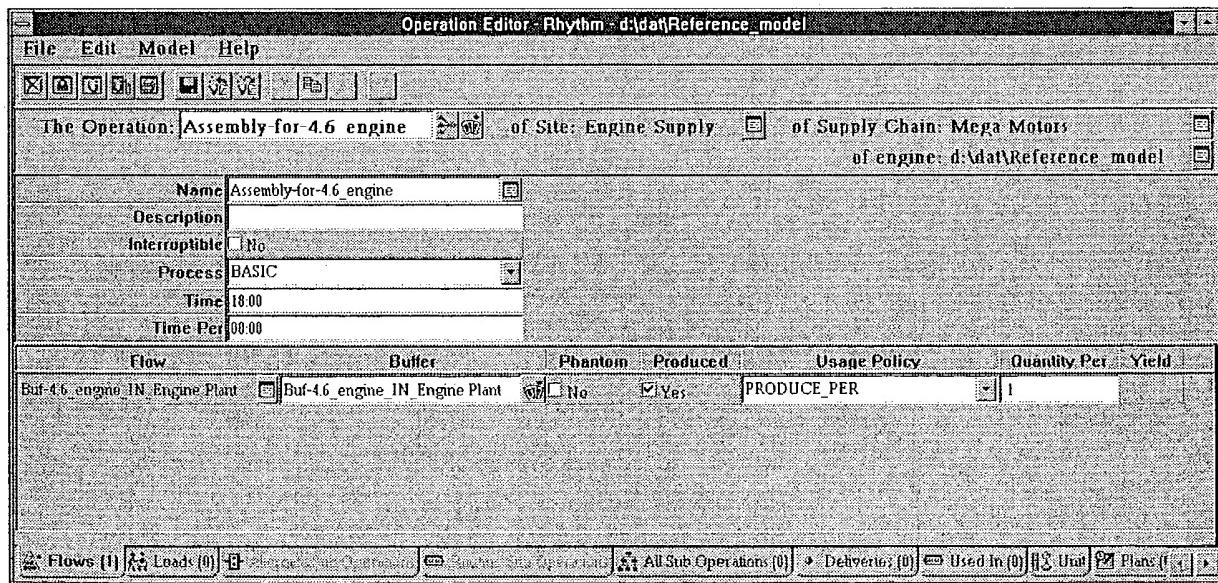
### 3.26.4 Modeling a Process

To display the *Operation Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> .                            |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.  |
| 6    | Select the <i>Sites</i> tab.  |
| 7    | Select the button next to a site name. The <i>Site Editor</i> is displayed.   |
| 8    | Select the <i>Operations</i> tab.   |
| 9    | Select the <i>Edit / Find</i> menu item, and search for the first operation with a process extension of ALTERNATES_PRIMARY. |
| 10   | Select the button next to that operation name. The <i>Operation editor</i> is displayed. See FIGURE 89.                     |
| 11   | (To add a new operation, select the <i>Model / New</i> menu item.)  |

FIGURE 89

Operation



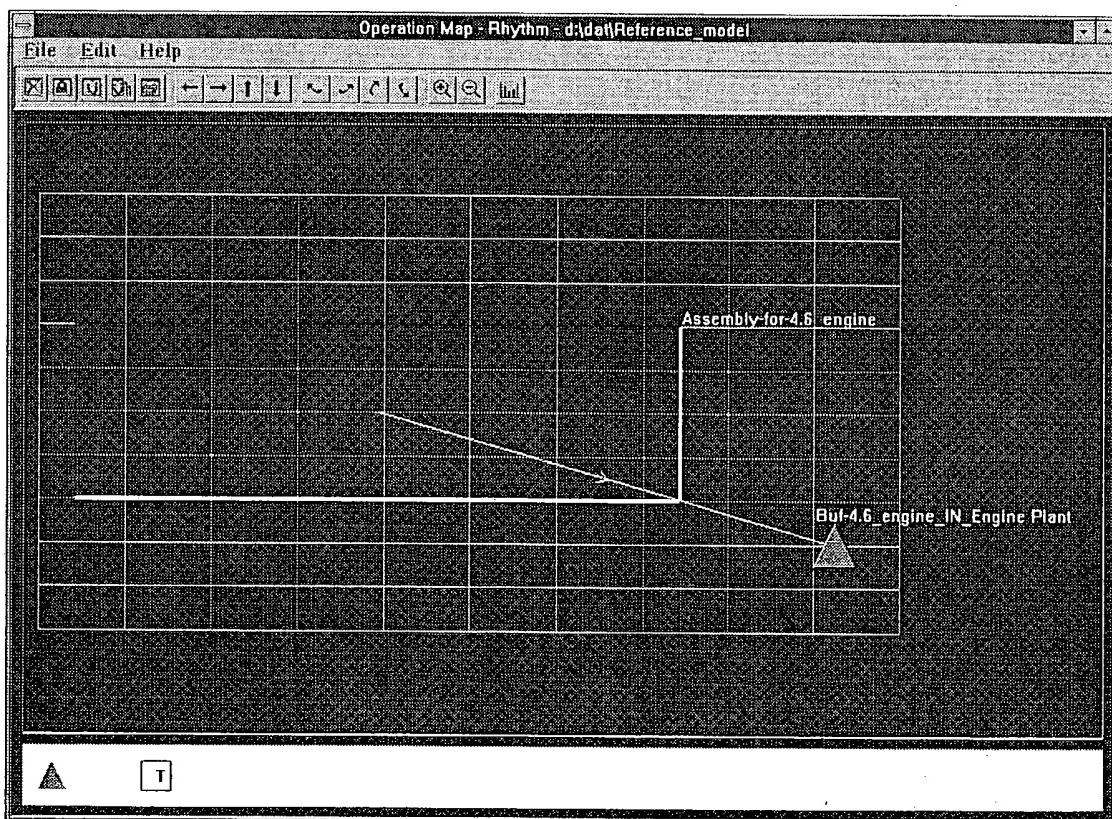
### 3.26.5 Displaying an Operation Map

To display an *Operation Map*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Operation</i> editor.  |
| 2    | Select the button next to the <i>Operation</i> name. The <i>Operation Map</i> for this operation is displayed. See FIGURE 90. |
| 3    | Note the number of inflows and outflows.  |
| 4    | Double click on the <i>Operation Map</i> . The <i>Buffer Map</i> is displayed.  |
| 5    | Note the number of inflows and outflows.  |

FIGURE 90

Operation Map



## 3.27 Operation Plan

### 3.27.1 Description

An *Operation Plan* represents the plan for performing an operation. The details include start and end dates for the activities, the resources that will be loaded and when, the buffers that will be consumed from or supplied to and when, and all other information specific to a particular operation. See FIGURE 91:

- start and end dates
- resources to be loaded, and when
- buffers to be consumed from or supplied to, and when
- whether released

FIGURE 91

Operation Plan

*Operation Plan Editor - Rhythm - /u/vicci/Cookie*

| The Operation Plan: Deliver-cc-cookies |                    | of Site Plan: Cookie-Factory    |                                 | of Plan: Active            |         |                   |    |      |       |
|--|--------------------|---------------------------------|---------------------------------|----------------------------|---------|-------------------|----|------|-------|
|  |                    | for Supply Chain: Cookies-R-Us  |                                 | of engine: /u/vicci/Cookie |         |                   |    |      |       |
| Operation                              | Deliver-cc-cookies | Release Name                    |                                 | Motive                     | DELIVER |                   |    |      |       |
| Site Plan                              | Cookie-Factory     | Units                           | 200                             | Delivery Promise           | Keebler |                   |    |      |       |
| Plan Active                            |                    | Std Time                        | 0 hr                            |                            |         |                   |    |      |       |
| Remark                                 |                    | Expedite                        | 100%                            |                            |         |                   |    |      |       |
| Process                                | BASIC              | Plan Dates                      | 97-02-01 00:00 / 97-02-01 00:00 |                            |         |                   |    |      |       |
|  |                    | Hint                            | [unspecified]                   |                            |         |                   |    |      |       |
|  |                    | Lock                            |                                 |                            |         |                   |    |      |       |
| Operation Plan                         | Process            | Dates                           | Std Time                        | Quantity                   | Hint    | Locked as planned | In | Outs | Loads |
| -- Deliver-cc-cookies                  | BASIC              | 97-02-01 00:00 / 97-02-01 00:00 | 0 hr                            | 200                        | No      | No                | 1  | 0    | 0     |

**Toolbars:** Hierarchy Hierarchy Gantt Upstream Downstream Flow Plans (1) Load Plans Alternates Upstream Alternates

An operation plan has the following fields:

- operation
- released (true / false)
- units - number of units of this operation planned
- std\_time - standard time required
- dates - start and end

- hint - temporary restriction
- lock - persistent user-imposed restriction
- operation states - various state reports about an operation plan from which the following fields are computed:
  - remaining time
  - completed time
  - percent complete
- problems

An operation plan has two sets of submodels:

- load plans - specify the resources to be loaded for the duration of the operation.
- flow plans - plan for flow of items between buffers and this operation specifies the buffers being supplied to or consumed from the quantity being consumed / produced.

### 3.27.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Operation* report.

Parent Model: Site\_Plan

Submodels: Load\_Plan, Flow\_Plan

### 3.27.3 Upstream Layout

The *Upstream* layout provides information about any upstream operation and flow plans. The direction of the arrows shows the direction of the flow of the item. The information in the *Upstream* layout is as follows:

- *Top Operation* - the name of the topmost operation plan containing the operation plan for the item. Select the report icon to display the *Operation Plan Editor* for the top operation.
- *Operation Plan* - the name of the operation plan for the item. Select the report icon to display the *Operation Plan Editor* for the operation.
- *Flow Plan* - the name of the flow plan for the item. Select the report icon to display the *Flow Plan Editor* for the flow plan.
- *Quantity* - the quantity of the item involved in the plan
- *Buffer Plan* - the name of the buffer plan for the buffer where the item is located. Select the report icon to display the *Buffer Plan Editor*.
- *Item* - the name of the planned item
- *Dates* - the date or range of dates for the flow plan.

### 3.27.4 Changing the Operation Plan Editor

The *Flow Plan Editor* and *Load Plan Editor* are nearly identical to the *Operation Plan Editor*. The only difference is the value that is passed in to the report, which is the value being edited. If any changes are made to this report, the *Flow Plan Editor* and *Load Plan Editor* may need to have similar changes.

### 3.27.5 Displaying an Operation Plan

To display the *Operation Plan Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .            |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.                              |
| 6    | Select the <i>Planning / Satisfy All Unanswered Requests</i> menu item.                          |
| 7    | Select the <i>Operations</i> tab.  |
| 8    | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed. |
| 9    | (To add a new operation plan, select the <i>Model / New</i> menu item.)                          |

### 3.27.6 Moving an Operation Plan

When an operation that supplies a buffer is moved later, the buffer on hand becomes negative and a problem is detected:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Unanswered Requests</i> menu item.  |
| 7    | Select the <i>Buffers</i> tab.   |
| 8    | Select the button next to a buffer plan name. The <i>Buffer Plan Editor</i> is displayed.  |
| 9    | In the <i>Site Plan Editor</i> , select the <i>Operations</i> tab.   |
| 10   | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed.   |
| 11   | Using the <i>Hint</i> field, change the operation plan to "start after 95-07-01 00:00:00" (or whatever date).  |
| 12   | Return to the <i>Buffer Plan</i> and select the <i>File / Update Report</i> menu item. The buffer now has negative on hand, and the operation plan has been moved. |

### 3.27.7 SDP and Consuming Operations

Strategy Driven Planning (SDP) does not push consuming operations beyond the planning horizon:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item. Operation plans are created.  |
| 7    | If there is only one request for 15000, and the quantity to be produced by each supplying operation is 5000, then the request gets split into three operation plans of 5000 each (using <i>FIXED_QUANTITY</i> logic). Problems are created.  |
| 8    | In the <i>Plan Editor</i> , select the <i>Problems</i> tab.  |
| 9    | Select the <i>Resolve</i> button next to a problem. The problem is resolved.   |
| 10   | Return to the <i>Site Plan Editor</i> .  |
| 11   | Select the <i>Operations</i> tab.  |
| 12   | Select the button next to an operation plan name. The <i>Operation Plan Editor</i> is displayed. Check the operation plans. The operations that consumed from the problem buffer should not be pushed out beyond the planning horizon. The operations should find material within the horizon. |

## 3.28 Operation State

### 3.28.1 Description

The *Operation State* provides a mechanism for reporting the state of the system. See FIGURE 92. It is intended to map state information provided by other systems to the operation plan. The operation state has the following fields:

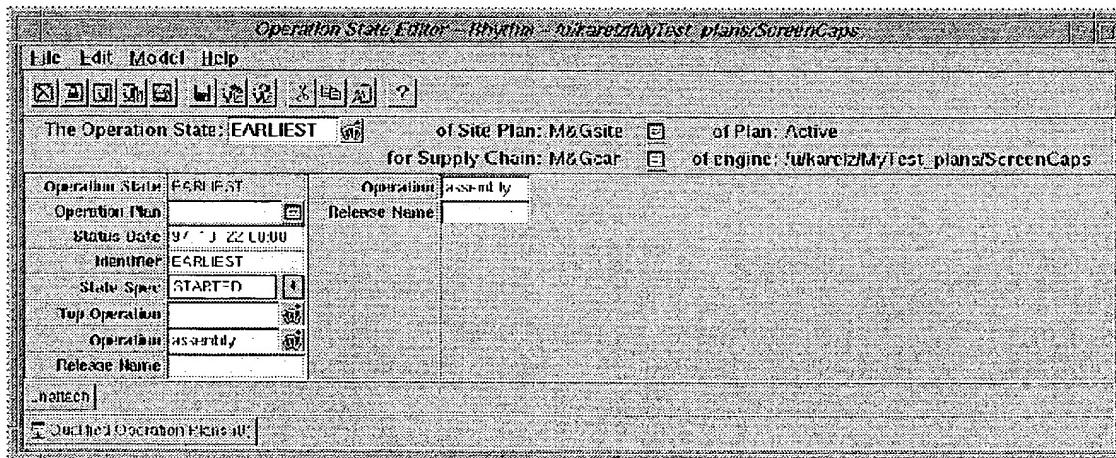
- *operation\_plan* - what is being reported about
- *date* - when the state was accurate

Operation state has the following extension selectors:

- *identifier* - specifies how to identify the operation plan to which this operation state pertains. This extension considers alternate operations while trying to find an operation plan for a given operation in the WIP data. If a WIP record refers to an operation plan that was not originally created by *Rhythm*, and if the operation plan is on an alternate operation, *Rhythm* removes the operation plan it created and replaces it with the operation plan it read in through WIP import.
- *state\_spec* - specifies the fields and how they are used to specify the state of the operation plan

**FIGURE 92**

Operation State



### 3.28.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Operation State* report.

Parent Model: Site\_Plan

### 3.28.3 Resolving Operation State Problems

When a user imports WIP data, Operation\_State objects are created, which in turn create UNIDENTIFIED\_OP\_STATE problems. These problems are immediate problems. Resolvers for these problems identify an operation plan to which to attach the WIP sing logic provided by the identifier extension. Then it will replan that selected operation plan to match the size and time information reported via the WIP file.

If an UNIDENTIFIED\_OP\_STATE problem cannot be resolved, then it creates a deferred problem with the same name, which will be solved later by running strategy. The only cases when immediate problems do not get resolved are if there are no operation plans planned for the operation on which the user is reporting the WIP. In those cases, the deferred problem resolver creates operation plans for that operation later, and attaches the WIP.

To resolve operation state problems:

- Run the model
- Satisfy All Requests
- Import WIP from wip import data. Note the wip getting attached to already planned operation plans.

### 3.28.4 Displaying an Operation State

To display the *Operation State Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .              |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.                                |
| 6    | Select the <i>States</i> tab.  |
| 7    | Select the button next to an operation state name. The <i>Operation State Editor</i> is displayed. |
| 8    | (To add a new operation state, select the <i>Model / New</i> menu item.)                           |

### 3.28.5 Reading Operation State to Identify and Attach to Operation Plan

To read an operation state to identify and attach to an operation plan:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item. Operation plans are created.                                      |
| 7    | Select the <i>File / Import</i> menu item.   |
| 8    | Import a directory that reads operation state. This should read in an operation state that identifies multiple operation plans |

## 3.29 Order Entry

### 3.29.1 Description

*Order Entry* is an activity of the *Request Editor*. *Order Entry* displays as the *Plan Request* tab of the *Request Editor*. See FIGURE 93. *Order Entry* (the *Request Editor*) allows for manual planning and promising of individual items in a request. The request may be from an actual order or from a forecast. Refer to the section *Plan Request* on page 134 for more information.

FIGURE 93

Order Entry: Plan Request Tab of Request Editor

The screenshot shows the 'Plan Request' tab of the Request Editor. It has three main sections: Request, Plan, and Promise.

**Request:**

|          |                |
|----------|----------------|
| Request  | sports car-1-1 |
| Item     | sports car     |
| Quantity | 125 < 125      |
| Price    | INFINITE       |

**Plan:**

|      |                  |
|------|------------------|
| Plan | [Empty Text Box] |
|------|------------------|

**Promise:**

|            |                |
|------------|----------------|
| Promise    | sports car-1-1 |
| sports car | 0 < 0          |
| 0 dol      |                |

Below these sections are four buttons: Plan Request, Promise As Planned, Plan Promise, and Promise & Offer Now. At the very bottom of the window are several small, partially visible buttons.

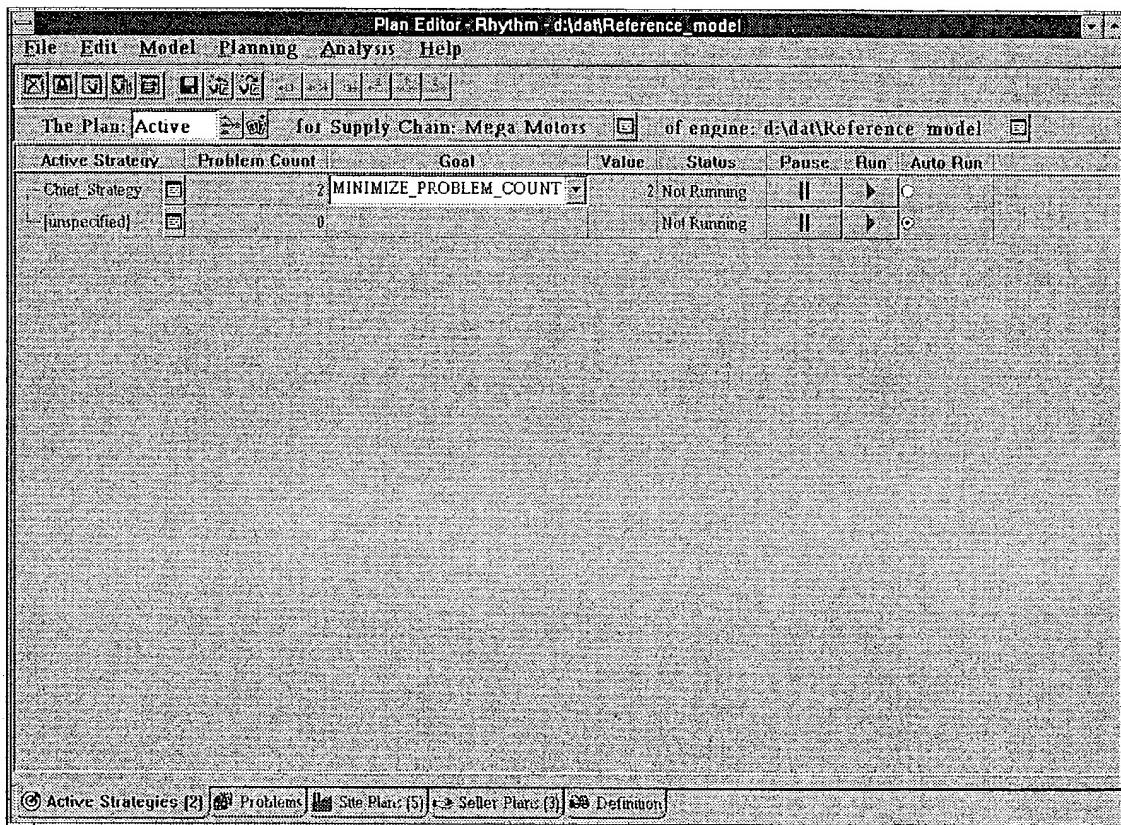
## 3.30 Plan

### 3.30.1 Description

The *Plan Editor* provides access to each of the plans for a supply chain. See FIGURE 94. A plan represents the current state and a possible sequence of future states of a supply chain. Rhythm allows any number of plans for each supply chain. The *Plan Editor* displays plan horizon dates and current time, and allows the user to view strategies and problems.

FIGURE 94

Plan

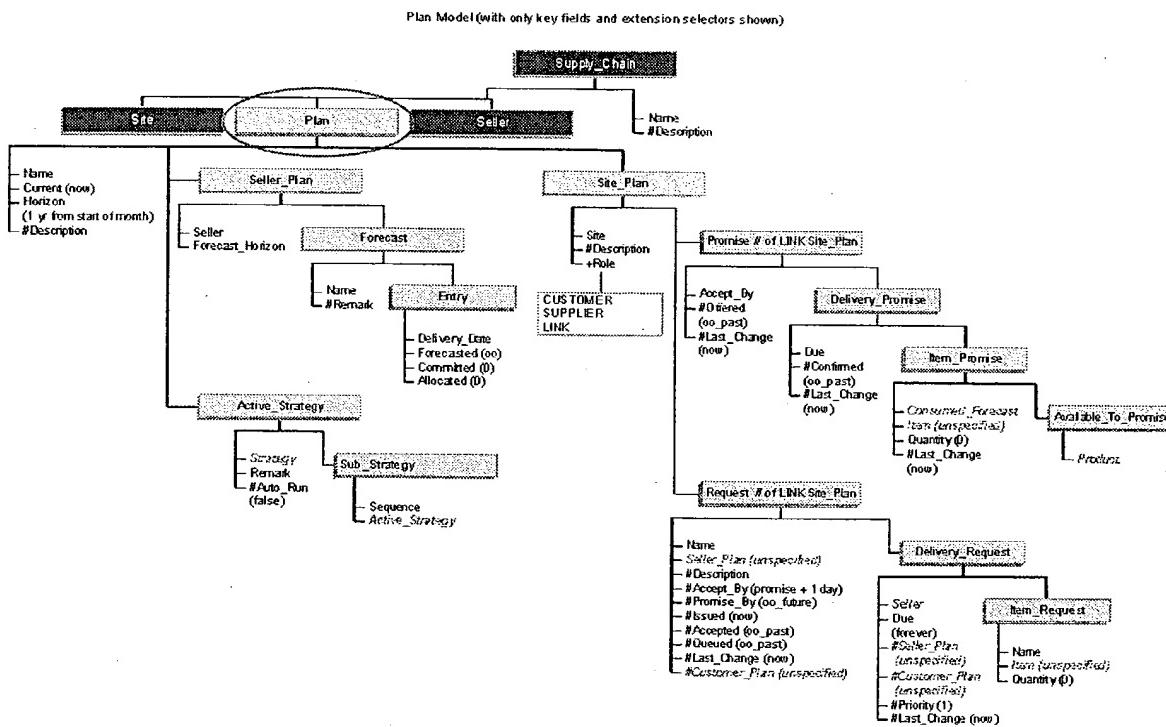


### 3.30.2 Model Structure

FIGURE 95 shows the relationship of the model to its parent model and submodels.

FIGURE 95

Model Structure



### 3.30.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Plan* report.

Parent Model: Plan

### **3.30.4 Problems**

A plan may contain problems for which Rhythm provides active strategies that can be employed to automatically solve the problems. The problem models a violation in a plan, including both feasibility and desirability problems. Some of the fields of the problem model include:

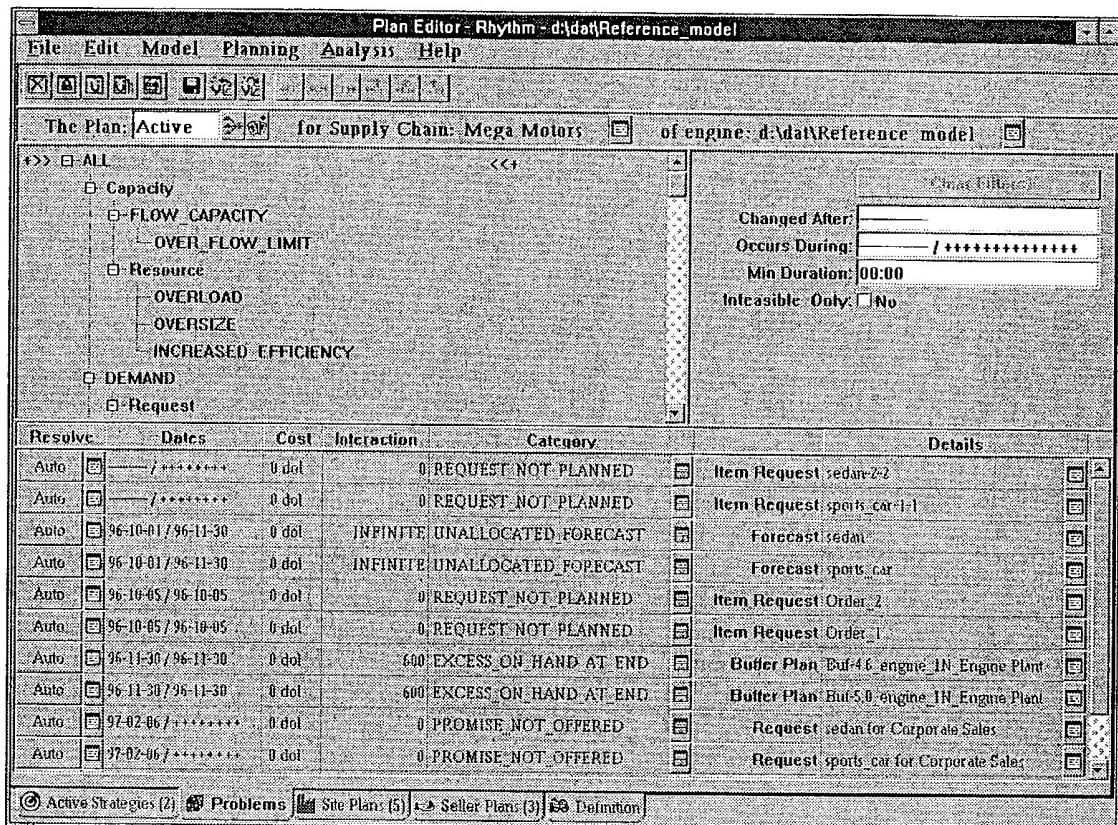
- description - of problem
- dates - over which problem exists
- feasible - false, if feasibility problem
- interaction - heuristic estimate of interaction of this problem with others; higher interaction means more difficult to solve.
- category - extension selector

The Problem has category selectors that differentiate the problems. See FIGURE 96. Some of the category extensions include:

- REQUEST\_NOT\_PLANNED - delivery plan has not been planned for item request
- REQUEST\_PLANNED\_LATE - delivery plan satisfies item request after delivery requests due date
- REQUEST\_PLANNED\_SHORT - delivery plan's quantity is less than requested.
- PRECEDENCE - violation of sequencing or timing rules among sub-operations
- OVER\_RESTRICTION - lock restrictions of operation plan force a violation
- EXPEDITED - operation plan has been expedited
- OVERLOAD - resource plan has load greater than capacity during a date range
- OVERSIZE - load planned exceeds available
- NEGATIVE\_ON\_HAND flow planned during a date range results in on hand being less than the minimum on hand

FIGURE 96

Plan Problems



### 3.30.5 Viewing a Plan

To display the *Plan Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .                             |
| 4    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> . |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.                   |
| 6    | (To add a new plan, select the <i>Model/New</i> menu item.)                      |

### 3.30.6 Resolving a Problem

To resolve a problem:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.   |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.  |
| 7    | Select the <i>Resources</i> tab.  |
| 8    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.   |
| 9    | Select the button next to the resource name. The <i>Resource Editor</i> is displayed.   |
| 10   | Change the <i>Fixed Efficiency</i> to 0.3 (30%).  |
| 11   | In the <i>Plan Editor</i> , select the <i>Problems</i> tab.   |
| 12   | Select the <i>Resolve</i> button next to an OVERSIZE problem. The engine updates the contents of the scroll window. This reduces the problem's period, or eliminates it altogether. It determines how to resolve, then tries one method. If that method does not work, the user can select <i>Resolve</i> again to try another method. Some problems are not resolvable ever, and some are resolvable only after a few tries. |
| 13   | In the <i>Plan Editor</i> , select the <i>Active Strategies</i> tab, then select the <i>Run</i> button for a strategy.  |
| 14   | When the strategy completes, select the <i>Problems</i> tab to list problems of various categories for the plan.  |
| 15   | Select the <i>Resolve</i> button next to an OVERSIZE problem. A change in problems should occur.  |

### 3.30.7 Running a Master Strategy

To run a *Master Strategy*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.   |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.  |
| 7    | Select the <i>File / Update Report</i> menu item.   |
| 8    | Display the <i>Plan Editor</i> .  |
| 9    | In the <i>Plan Editor</i> , select the <i>Active Strategies</i> tab, then select the <i>Run</i> button for the <i>Master Strategy</i> .       |
| 10   | When the <i>Master Strategy</i> completes, select the <i>Problems</i> tab to list problems of various categories for the plan. See FIGURE 96. |

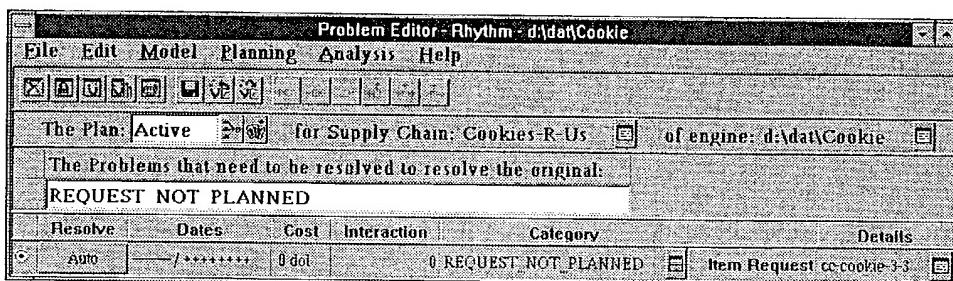
### 3.31 Problem Editor

#### 3.31.1 Description

This section describes the *Problem Editor*. Problems model a violation in a supply chain plan. The *Problem Editor* is used to view information about problems and to resolve individual problems. See FIGURE 97.

FIGURE 97

Problem Editor



#### 3.31.2 Problems Layout

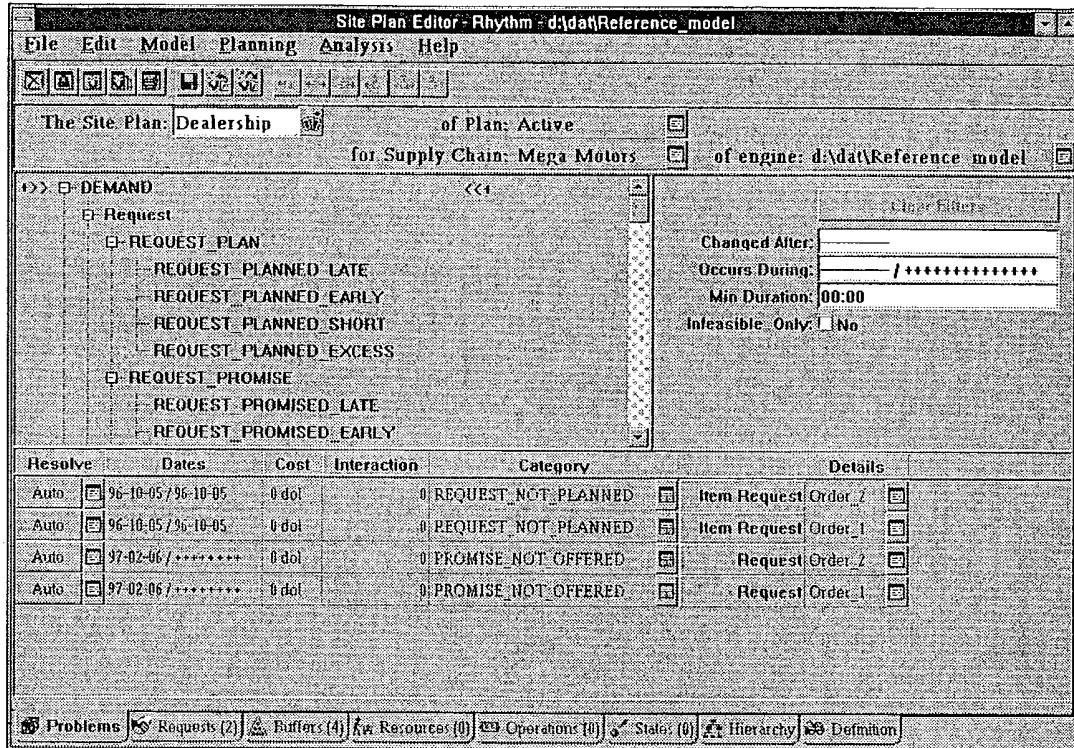
The *Problem Editor* is accessed from the *Problems* layout in the following editors:

- Site Plan
- Plan
- Resource Plan

This section describes the *Problems* layout as used with the *Site Plan Editor*. See FIGURE 98. The layout is basically the same for the other editors, but the specific information displayed may vary. For example, in the *Resource Plan Editor* only resource problems are displayed in the *Problems* layout.

FIGURE 98

Problems Layout - Site Plan



### 3.31.3 Viewing Problem Editor

To view the *Problem Editor*, take the following steps:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> window.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Plan</i> , <i>Site</i> , or <i>Resource</i> (on <i>FLO</i> tree) from the list of <i>Domains</i> .  |
| 4    | Select <i>Plan Editor</i> , <i>Site Plan Editor</i> , or <i>Resource Plan Editor</i> from the list of <i>Reports/Activities for...</i>                                      |
| 5    | Select the <i>Problems</i> tab from the selected report.  |
| 6    | Click the <i>Report</i> button for a particular problem (under the <i>Resolve</i> column). The <i>Problem Editor</i> displays.  |
| 7    | (To view the <i>Problem Editor</i> for a different problem, close the current <i>Problem Editor</i> window and click the <i>Report</i> button for that particular problem.) |

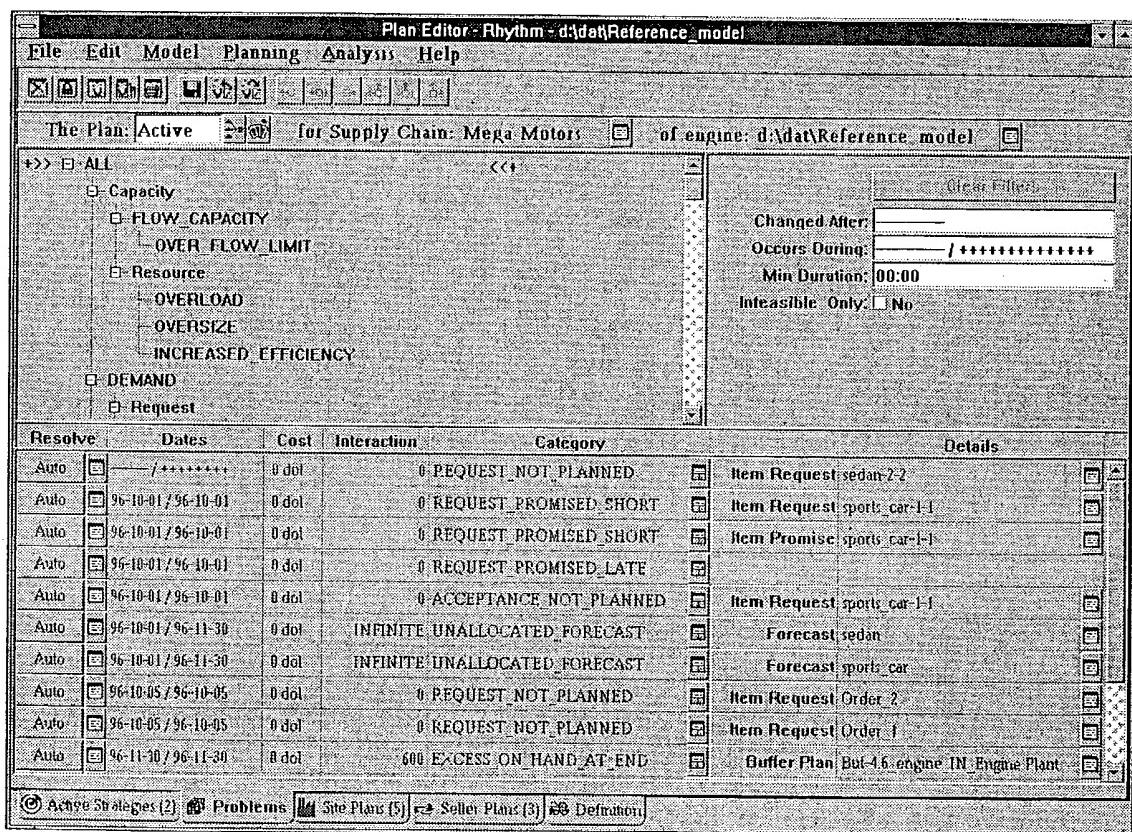
## 3.32 Problem List

### 3.32.1 Description

The *Problem List* report exists on the *Problems* tab of the *Buffer Plan Editor*, the *Plan Editor*, the *Resource Plan Editor*, and the *Site Plan Editor*. See FIGURE 99. For all other domains, when *Problem List* is called, a report called *Problem Explorer* displays. See FIGURE 100. The *Problem List* displays all problems associated with a particular plan, and various attributes of those problems.

FIGURE 99

Problem List for Plan Editor



### 3.32.1.1 Problems List Components (Problems Tab)

A plan may contain problems for which Rhythm provides active strategies that can be employed to automatically solve the problems. The problem models a violation in a plan, including both feasibility and desirability problems. Some of the fields of the problem model include:

- details - of problem
- dates - over which problem exists
- cost - amount problem costing
- interaction - heuristic estimate of interaction of this problem with others; higher interaction means more difficult to solve.
- category - extension selector

The Problem has category selectors that differentiate the problems. See FIGURE 96. Some of the category extensions include:

- REQUEST\_NOT\_PLANNED - delivery plan has not been planned for item request
- REQUEST\_PLANNED\_LATE - delivery plan satisfies item request after delivery requests due date
- REQUEST\_PLANNED\_SHORT - delivery plan's quantity is less than requested.
- PRECEDENCE - violation of sequencing or timing rules among sub-operations
- OVER\_RESTRICTION - lock restrictions of operation plan force a violation
- EXPEDITED - operation plan has been expedited
- OVERLOAD - resource plan has load greater than capacity during a date range
- OVERRSIZE - load planned exceeds available
- NEGATIVE\_ON\_HAND flow planned during a date range results in on hand being less than the minimum on hand

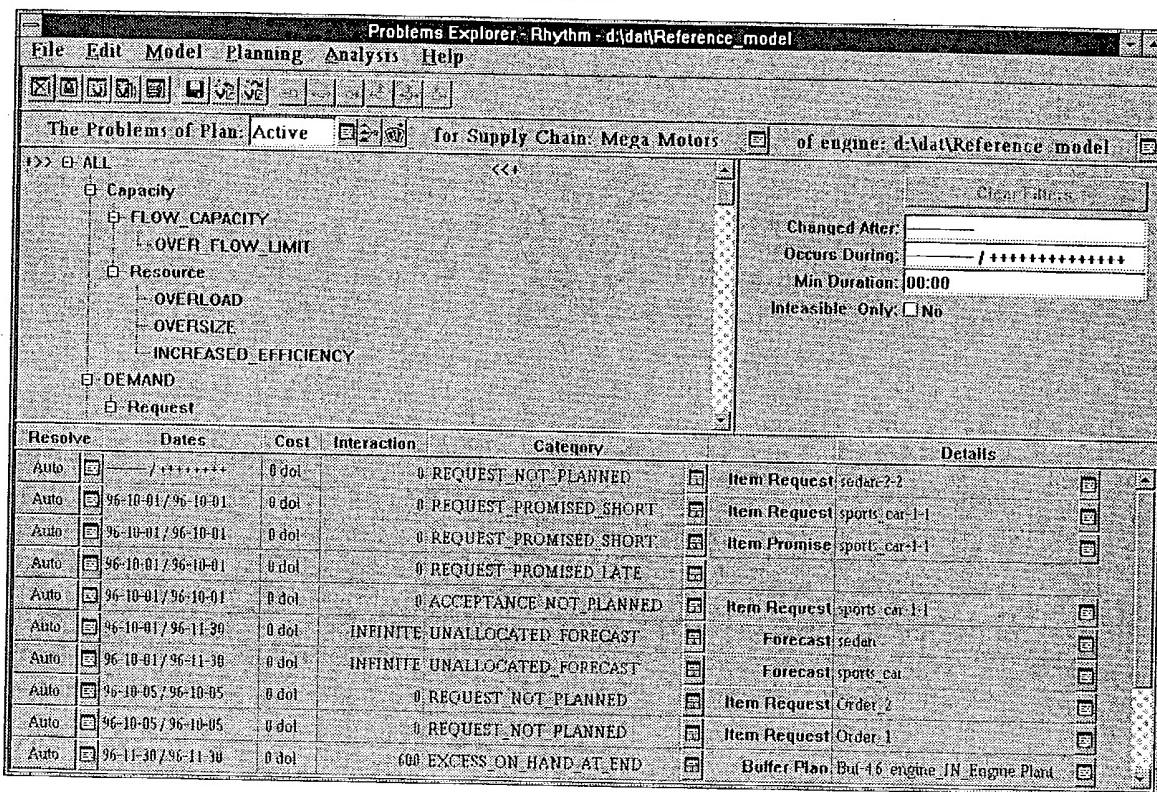
The top portion of the report displays the Domains tree, from which the user can expand or collapse the tree to increase or decrease the number of problems being displayed. This portion of the report also contains some filters that, when selected, filter for particular problems meeting the specified attributes.

### 3.32.1.2 Problem List: Problems Explorer

The *Problems Explorer* displays the same information as the *Problems* tab.

FIGURE 100

Problem List: Problems Explorer



### 3.32.2 Viewing Problem List

To view the Problem List, take the following steps:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3a   | To display the Problem List for the <i>Buffer Plan Editor</i> , the <i>Plan Editor</i> , the <i>Resource Plan Editor</i> , or the <i>Site Plan Editor</i> , choose one of the following from the list of <i>Domains</i> : <ul style="list-style-type: none"> <li>• <i>Plan</i> (for <i>Plan Editor</i>)</li> <li>• <i>Site</i> (for <i>Site Plan Editor</i>)</li> <li>• <i>FLO</i> (for <i>Buffer Plan Editor</i> and <i>Resource Plan Editor</i>)</li> </ul> |
| 3b   | To display the <i>Problem List</i> for any domain other than those in step 3a, choose the appropriate domain from the list of <i>Domains</i> .  |
| 4    | Select the desired report from the list of <i>Reports/Activities for...</i><br><br>Note that if displaying <i>Problem List</i> for <i>Buffer Plan Editor</i> , <i>Plan Editor</i> , <i>Resource Plan Editor</i> , or <i>Site Plan Editor</i> , the specific report must be chosen and the <i>Problems</i> tab of each of these reports is the <i>Problem List</i> . For all other domains, select <i>Problem List</i> .                                       |
| 5 *  | Click <i>Display Report</i> . The specified report displays.  |
| 6    | (To view the <i>Problem List</i> for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)  |

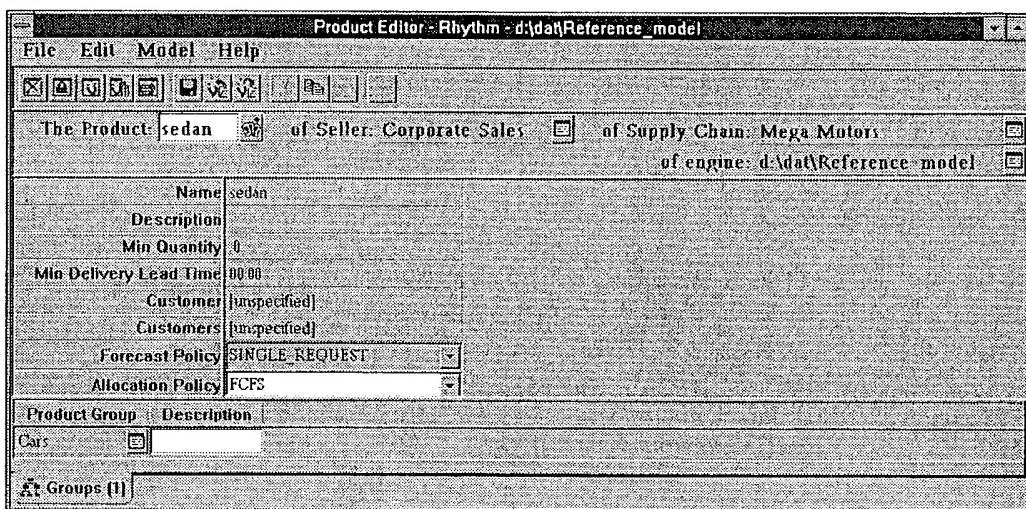
### 3.33 Product

#### 3.33.1 Description

A *Product* defines one or more items that are available to a set of customers with a certain delivery lead time to certain delivery territories, at a certain price. Any of those may be unlimited (any delivery lead time; any delivery address; etc.). Each product is independently forecasted, allocated, and priced for the purposes of quoting/promising. See FIGURE 101.

FIGURE 101

Product

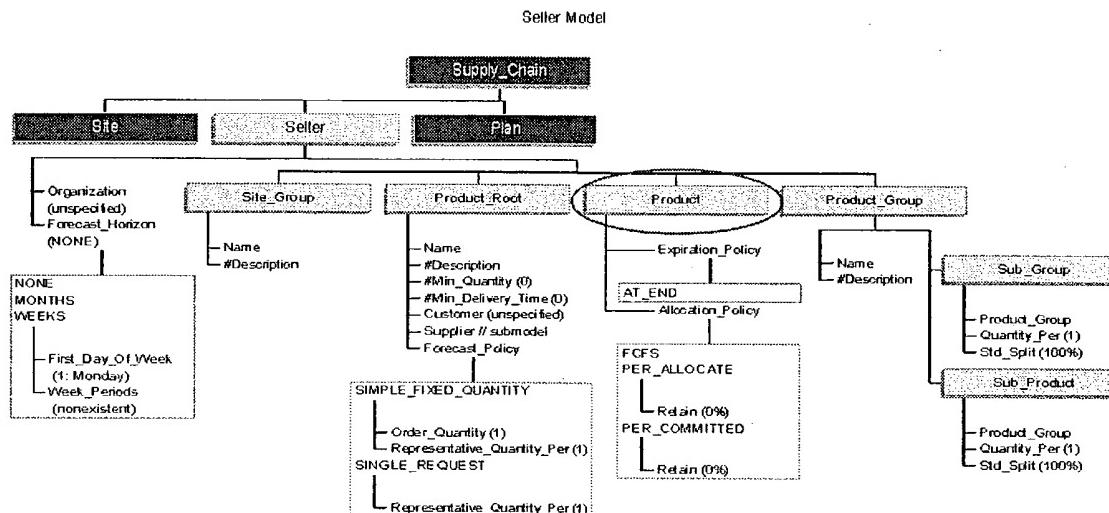


### 3.33.2 Model Structure

FIGURE 102 shows the relationship of the model to its parent model and submodels.

FIGURE 102

Model Structure



### 3.33.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Product* report.

Parent Model: Seller

Submodels: Product\_Allocation

### 3.33.4 Displaying a Product

To display the *Product Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Products</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .    |
| 4    | Select <i>Forecast Editor</i> from the list of <i>Reports/Activities for Products</i> . |
| 5    | Click <i>Display Report</i> . The <i>Forecast Editor</i> displays.                      |
| 6    | Select the <i>Definition</i> tab.   |
| 7    | Select the button next to a product name. The <i>Product Editor</i> is displayed.       |
| 8    | (To add a new product, select the <i>Model / New</i> menu item.)                        |

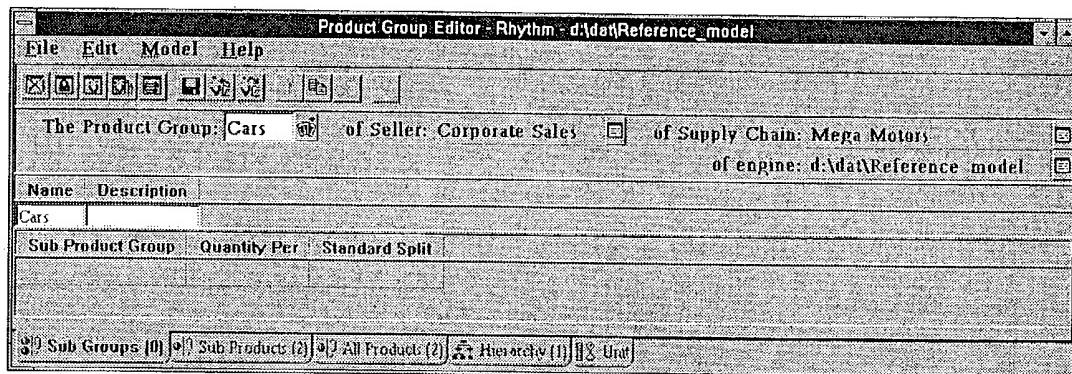
## 3.34 Product Group

### 3.34.1 Description

The *Product Group Editor* models a hierarchical grouping or classification of products. A product can only appear directly in only one product group of a hierarchy. Similarly, a product group can only appear directly in one place in the hierarchy. However, a product can appear in any number of separate product group hierarchies. See FIGURE 103.

FIGURE 103

Product Group

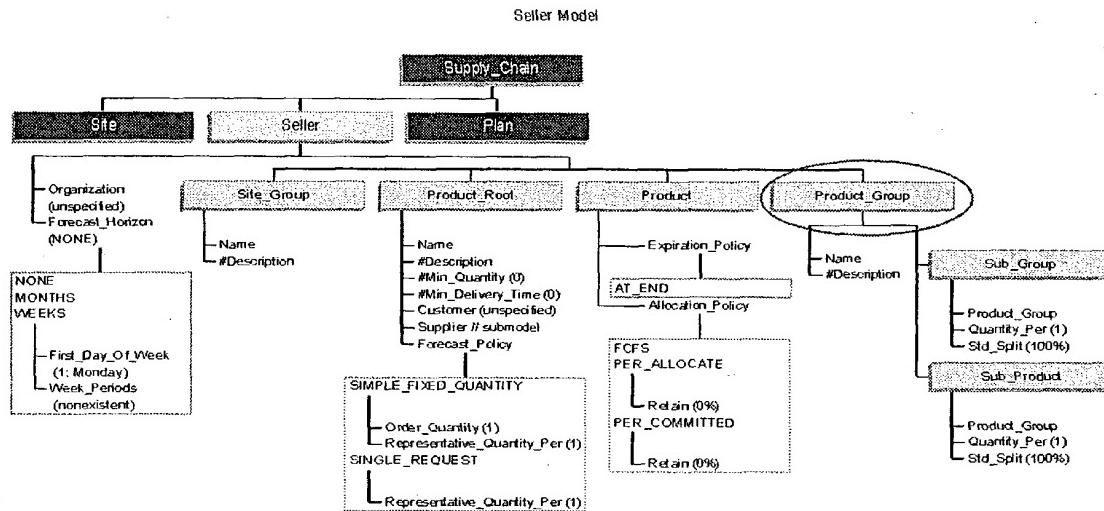


### 3.34.2 Model Structure

FIGURE 104 shows the relationship of the model to its parent model and submodels.

FIGURE 104

Model Structure



### 3.34.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Product Group* report.

Parent Model: Seller

Submodels: Sub\_Product\_Group, Sub\_Product

### 3.34.4 Displaying a Product Group

To display the *Product Group Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Products</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .          |
| 4    | Select <i>Forecast Editor</i> from the list of <i>Reports/Activities for Products</i> .       |
| 5    | Click <i>Display Report</i> . The <i>Forecast Editor</i> displays.                            |
| 6    | Select the <i>Definition</i> tab.   |
| 7    | Select the button next to a product group name. The <i>Product Group Editor</i> is displayed. |
| 8    | (To add a new product group, select the <i>Model/New</i> menu item.)                          |

### 3.34.5 Inheritance of Products and Product Groups

For product groups defined at the top seller, the member sellers automatically inherit the definition. One does not need to manually define the product groups for each member seller. The inheritance of products and product groups works as follows:

- In a seller hierarchy, a seller may forecast for or use any product or product group defined by that seller or any ancestor (i.e. via the *organization* field) of that seller.

When writing the import file, one may explicitly find the product or product group one wishes to inherit by writing the expression as follows to find the product named *test* in the seller named #s:

```
[product_groups.sub_products.product = SUPP.sellers.find(#s).  
products.find("test");]
```

One could have also written:

```
[product_groups.sub_products.product = "test";]
```

and the import file would find the product whose name was *test* in an ancestor of the current seller.

- Any seller in a seller hierarchy may redefine a product or product group defined higher in the hierarchy.

When writing the import file one may simply refer to the product or product group one wishes to redefine. For example, the following expression in an import file will redefine the Product named *test* for the current seller:

```
[product_groups.sub_products.product = "test";]
```

## 3.35 Product Item

---

### 3.35.1 Description

The *Product Item* lists the items of the supplier site that are sold as the product root. See FIGURE 105. The purpose of the *Product\_Supplier* and *Product\_Item* models is to tie items to products. Products are associated with a seller within a supply chain. Items are associated with a site within a supply chain. So, when specifying an item for a product field, there is nowhere to get the owning site. Users, therefore, cannot just specify a key field. Rather, they would have to explicitly find the site and then explicitly find the item within that site.

The *Product\_Supplier* and *Product\_Item* models allow the user to just specify the two key fields and the item will be automatically found for them. They specify the name of the site, and the site is looked up within the owner *Supply\_Chain* model. They specify the name of the item, which is looked up within that site.

All that information does not need to be stored. If the item is known, then the site is known. No other site-specific information is stored, and so any site structure can be skipped.

Note that there is no point in having a *Product\_Supplier* without any *Product\_Items*.

---

**FIGURE 105**

Product Item

### 3.35.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Product Item* report.

Parent Model: *Product\_Supplier*

### 3.35.3 Displaying a Product Item

To display the *Product Item Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Products</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .        |
| 4    | Select <i>Forecast Editor</i> from the list of <i>Reports/Activities for Products</i> .     |
| 5    | Click <i>Display Report</i> . The <i>Forecast Editor</i> displays.                          |
| 6    | Select the <i>Definition</i> tab.   |
| 7    | Select the <i>Sellers</i> tab.  |
| 8    | Select the button next to a seller name. The <i>Seller Editor</i> is displayed.             |
| 9    | Select the <i>Product Roots</i> tab.  |
| 10   | Select the button next to a product root name. The <i>Product Root Editor</i> is displayed. |
| 11   | Select the button next to an item name. The <i>Product Item Editor</i> is displayed.        |
| 12   | (To add a new product root, select the <i>Model/New</i> menu item.)                         |

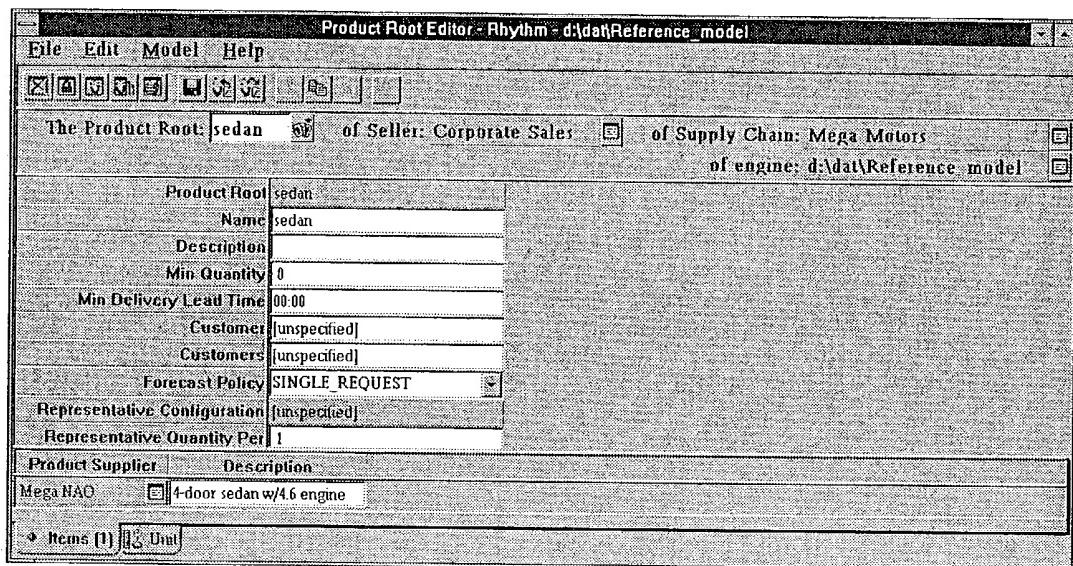
### 3.36 Product Root

#### 3.36.1 Description

A *Product Root* defines the base information of a product. Defining a product root defines a product seller tree. The root of that tree is the product in this seller. The corresponding products in each of the members of this seller form the rest of the product seller tree. Products cannot be added directly. A product root must be added. See FIGURE 103.

FIGURE 106

Product Root

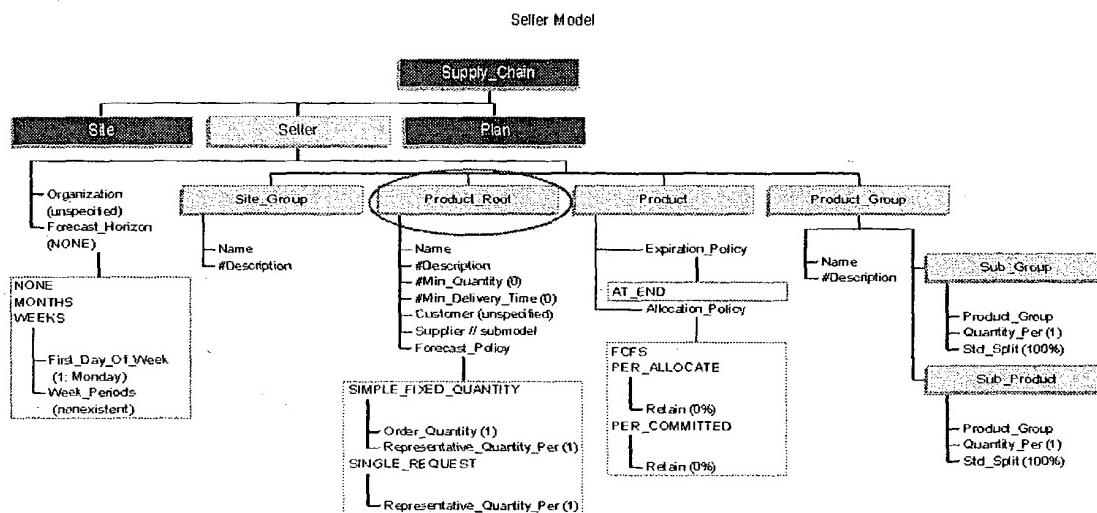


### 3.36.2 Model Structure

FIGURE 107 shows the relationship of the model to its parent model and submodels.

FIGURE 107

Model Structure



### 3.36.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Product Root* report.

Parent Model: Seller

Submodels: Product\_Supplier

### 3.36.4 Displaying a Product Root

To display the *Product Root Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Products</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .        |
| 4    | Select <i>Forecast Editor</i> from the list of <i>Reports/Activities for Products</i> .     |
| 5    | Click <i>Display Report</i> . The <i>Forecast Editor</i> displays.                          |
| 6    | Select the <i>Definition</i> tab.   |
| 7    | Select the button next to a product root name. The <i>Product Root Editor</i> is displayed. |
| 8    | (To add a new product root, select the <i>Model/New</i> menu item.)                         |

### 3.36.5 Setting a Product Root and its Supplier

The Product Root and its suppliers are set as follows. The *Product\_Root* has a submodel *Product\_Supplier*. This is where the supplier site gets set and kept. When someone sets the supplier, a value pair with *Product\_Root* and supplier is newed and kept. Whenever the user adds a supplier, the unspecified item of that site is added. When the user adds the real item, the unspecified item of that site is removed. The following lines in a *.imp* file set the item.

```
product_roots.suppliers.supplier = "MY_SITE"  
product_roots.suppliers.items.item = "MY_SITE"
```

## 3.37 Request

### 3.37.1 Description

The *Request Editor* allows for manual planning and promising of individual items in a request. The request may be from an actual order or from a forecast. This section describes the *Request Editor* report. See FIGURE 108. It also explains how to plan and promise requested items using the *Request Editor*.

FIGURE 108

Request Editor

The screenshot shows the Request Editor application window titled "Request Editor - Rhythm - d:\dat\Reference\_model". The window has a menu bar with File, Edit, Model, Help. Below the menu is a toolbar with various icons. The main area contains several input fields and dropdown menus.

| The Request:                   |                                    | of Site Plan:     |                          | of Plan:                 |                                   |
|--------------------------------|------------------------------------|-------------------|--------------------------|--------------------------|-----------------------------------|
| sports car for Corporate Sales | <input type="button" value="..."/> | Mega NAO          | <input type="checkbox"/> | Active                   | <input type="checkbox"/>          |
|                                |                                    | for Supply Chain: | Mega Motors              | <input type="checkbox"/> | of engine: d:\dat\Reference_model |

| Request                        | Seller Plan                     | Promise Offered                          |
|--------------------------------|---------------------------------|--|
| sports car for Corporate Sales | Corporate Sales                 | <input type="button" value="Offer Now"/> |
| Customer Plan: Unspecified     | Supplier: Mega NAO              |  |
| Request Issued: 97-02-06 14:27 | Generating Forecast: sports car |  |
| Promise By: *****              | Promise Offered:                |  |
| Accept By: *****               |                                 | <input type="button" value="Offer Now"/> |
| Accepted: *****                | Accept By: *****                |  |
| Last Change: 97-02-06 14:27    | Last Change: 97-02-06 14:27     |  |

| General  |                    |                |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
|--|--------------------|----------------|---------|----------------|--|----------------|------------------|--|------------|---------------------|--|-------|-----------------|--|-------|---|--------------|--------------------|--------------|--|--|--|
| Request (1)  | Promise (1)        |                |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| <table border="1"> <thead> <tr> <th>Request</th> <th>Plan</th> <th>Promise</th> </tr> </thead> <tbody> <tr> <td>sports car-1-1</td> <td></td> <td>sports car-1-1</td> </tr> <tr> <td>Item: sports car</td> <td></td> <td>sports car</td> </tr> <tr> <td>Quantity: 125 &lt; 125</td> <td></td> <td>0 &lt; 0</td> </tr> <tr> <td>Price: INFINITE</td> <td></td> <td>0 dol</td> </tr> </tbody> </table> | Request            | Plan           | Promise | sports car-1-1 |  | sports car-1-1 | Item: sports car |  | sports car | Quantity: 125 < 125 |  | 0 < 0 | Price: INFINITE |  | 0 dol | <table border="1"> <thead> <tr> <th>Plan Request</th> <th>Promise As Planned</th> <th>Plan Promise</th> </tr> </thead> <tbody> <tr> <td colspan="3"><input type="button" value="Promise &amp; Offer Now"/></td> </tr> </tbody> </table> | Plan Request | Promise As Planned | Plan Promise | <input type="button" value="Promise &amp; Offer Now"/> |  |  |
| Request  | Plan               | Promise        |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| sports car-1-1   |                    | sports car-1-1 |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| Item: sports car   |                    | sports car     |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| Quantity: 125 < 125  |                    | 0 < 0          |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| Price: INFINITE  |                    | 0 dol          |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| Plan Request   | Promise As Planned | Plan Promise   |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |
| <input type="button" value="Promise &amp; Offer Now"/>   |                    |                |         |                |  |                |                  |  |            |                     |  |       |                 |  |       |   |              |                    |              |  |  |  |

| Plan Request                       | Promise As Planned                 | Plan Promise                       |
|------------------------------------|------------------------------------|------------------------------------|
| <input type="button" value="..."/> | <input type="button" value="..."/> | <input type="button" value="..."/> |

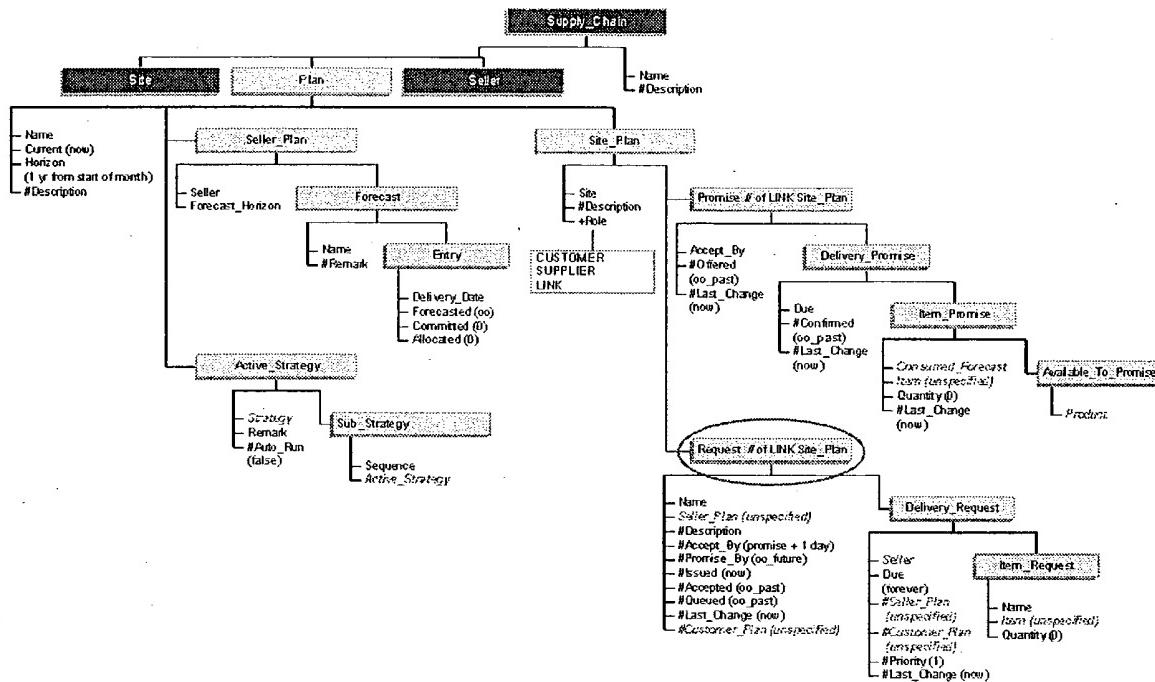
### 3.37.2 Model Structure

FIGURE 109 shows the relationship of the model to its parent model and submodels.

FIGURE 109

Model Structure

Plan Model (with only key fields and extension selectors shown)



### 3.37.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as *Supply\_Chain* contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Request* report.

Parent Model: Site\_Plan

Submodels: Delivery\_Request

### 3.37.4 Request Editor Report Description

The *Request Editor* report has two sections of information. The top section contains basic information about a request, and has layouts with delivery and promise information for delivery requests. The bottom section of the report contains information about each line item that makes up the request, including request, quote, delivery plan, and plan alternates. Plans and promises are performed in this section. The following subsections describe the layouts of the *Request Editor*.

#### 3.37.4.1 General

The *General* layout displays basic information about the request, such as the name, customer, and date. The information is displayed in two columns. The left column has information about the request from the requestor, and the right column has information about the promise. The information in the *General* layout is as follows:

- *Request* - the name of the request.
- *Customer* - the name of the customer, if the request is an actual order. Select the button next to the customer name to display the *Site Plan Editor* for the site placing the request.
- *Request Issued* - the date and time at which the request was made.
- *Promise By* - the date and time by which the requestor wants to have an answer to the request.
- *Accept By* - the latest date and time by which the requestor intends to accept or reject a promise.
- *Accepted* - the date and time at which the promise was accepted.
- *Last Change* - the date and time at which the information about the request was last changed.
- *Seller* - the name of the seller. Select the button next to the seller name to display the *Seller Plan Editor* for the seller who is responsible for this agreement.
- *Supplier* - the name of the supplier. Select the button next to the supplier name to display the *Site Plan Editor* for the site responsible for promising and filling the request.
- *Promise Offered* - the date and time at which the promise was offered.
- *Accept By* - the date and time by which the promise must be accepted before it will expire.
- *Last Change* - the date and time at which the information about the promise was last changed.
- *Offer Now* - select this button after planning is performed, to make the promise.

### 3.37.4.2 Request

The *Request* layout displays information about delivery requests. See FIGURE 110.

FIGURE 110

Request

The screenshot shows a software application window titled "Request Editor - Rhythm - d:\dat\Reference\_model". The window has a menu bar with File, Edit, Model, and Help. Below the menu is a toolbar with various icons. The main area contains several text fields and checkboxes. At the top, there are fields for "The Request": "sports car for Corporate Sales" and "of Site Plan: Mega NAO". There are also checkboxes for "of Plan: Active" and "for Supply Chain: Mega Motors". Below these are checkboxes for "of engine: d:\dat\Reference\_model". A table follows with columns: Requested Dates, Requested Item, Requested, Max Price, Promised Dates, Promised Item, Promised, and Price. The table contains one row with values: "96-10-01 / 96-10-01", "sports\_car", "125 < 125", "INFINITE", "----- / \*\*\*\*\*", "sports\_car", "0 < 0", and "0 dol". At the bottom left are buttons for "General Request [1]" and "Promise [1]".

The information on the *Request* layout is as follows:

- *Requested Dates* - the date or range of dates in which the delivery should be made.
- *Requested Item* - the number of the requested item.
- *Requested* - the quantity of the item that is requested.
- *Max Price* - the maximum price desired by the requestor.
- *Promised Item* - the number of the requested item.
- *Promised* - the quantity of the item that is promised.
- *Price* - the price of the promised item.

### 3.37.4.3 Promise

The information on the *Promise* layout provides details about plans and promises for each delivery request. See FIGURE 111.

FIGURE 111

Promise

| Delivery Request | Requested Dates     | Item                       | Quantity                                | Price                 |                          |
|------------------|---------------------|----------------------------|---|-----------------------|--------------------------|
| sports car       | 96-10-01 / 96-10-01 | Request<br>Promise<br>Plan | sport_car-1<br>sport_car-1<br>sport_car | 125<br>0 < 0<br>0 dol | 125<br>INFINITE<br>0 dol |

The information on the *Promise* layout is as follows:

- *Delivery Request* - the delivery request name.
- *Requested Dates* - the date or range of dates in which the delivery should be made.
- *Request* - the item request name.
- *Promise* - the promise name.
- *Plan* - the plan name.
- *Item* - the name of the item requested, followed by the name of the promise, and the name of the plan.
- *Quantity* - the requested quantity of the item (a range), followed by the promised quantity (a range), and the planned quantity.
- *Price* - the requested price of the item, followed by the promised price, and the planned price.

### 3.37.4.4 Plan Request

The *Plan Request* layout provides information about item requests. See FIGURE 108 and FIGURE 112. This layout is used to manually plan and promise requests. FIGURE 112 shows the layout after a request has been planned and promised.

FIGURE 112

Request

| Request  |            | Plan                | Promise                        |
|--|------------|---------------------|--------------------------------|
| sports car-1-1   |            |                     | sports car-1-1                 |
| Item   | sports car |                     | sports car                     |
| Quantity   | 125 < 125  |                     | 0 < 0                          |
| Price  | INFINITE   |                     | 0 dol                          |
|  |            | <b>Plan Request</b> | <b>Promise As Planned</b>      |
|  |            | <b>Plan Promise</b> | <b>Promise &amp; Offer Now</b> |
| <input type="button" value="Plan Request"/> <input type="button" value="Plan Promise"/> <input type="button" value="Promise As Planned"/> <input type="button" value="Promise &amp; Offer Now"/> |            |                     |                                |

The information in the *Plan Request* layout is as follows:

- *Request* - the name of the request, followed by the name of the requested *Item*, the *Quantity* of the requested item (a range), and the *Price* of the requested item.
- *Plan* - the plan name, *Item* name, item *Quantity*, and item *Price*.
- *Promise* - this column lists the promise name, the *Item* name, the promised *Quantity*, and the promised *Price*. The arrows next to this column point to the plan information.
- *Plan Request* - select this button to perform planning for the requested item.
- *Promise As Planned* - select this button to perform a promise of the plan for the request.
- *Promise & Offer Now* - select this button to perform a promise of the plan, and to offer the plan.
- *Plan Promise* - select this button to plan a promise for the item.

### 3.37.4.4.1 Changing / Planning Requests

To change requests and then plan only the changes, perform the following using the *Seller Plan Editor*:

| Step | Action  |
|------|---|
| 1    | Open the appropriate <i>Request Editor</i> .  |
| 2    | Use the <i>Request</i> tab to select the <i>Item Request</i> which changed.           |
| 3    | In the <i>Plan Request</i> tab (lower pane), click on the <i>Plan Request</i> button. |
| 4    | Click on the <i>Promise As Planned</i> button.  |

This plans the *Item Request* selected in the *Request* tab (upper pane).

### 3.37.4.5 Quote

The *Quote* layout provides ATP information about the requested item. See FIGURE 113.

FIGURE 113

Quote

| Requested Item | Requested         | Max Price | Product      | Dates                          | Available | List Price |        |
|----------------|-------------------|-----------|--------------|--------------------------------|-----------|------------|--------|
| L8             | ZUU <=> ZUU       | INFINITE  | P-C9-INK-SEL | 96-1-0 00:00 / 96-12-31 00:00  | 203       | 0 dol      | Accept |
| F8             | ?00 <=> ?00       | INFINITE  | S-C9-INK-SEL | 96-1-0 00:00 / 96-12-31 00:00  | 201       | 0 dol      | Accept |
| E9             | 20003 <=> 20000   | INFINITE  | P-C9-INK-SEL | 96-02-0 00:00 / 96-02-31 00:00 | 1250      | 0 dol      | Split  |
| C9             | 20003 <=> 20000   | INFINITE  | P-C9-INK-SEL | 96-02-0 00:00 / 96-02-31 00:00 | 2730      | 0 dol      | Split  |
| F9             | ?00001 <=> ?00000 | INFINITE  | P-C9-INK-SEL | 96-02-0 00:00 / 96-02-31 00:00 | 5220      | 0 dol      | Split  |
| E9             | 20003 <=> 20000   | INFINITE  | P-C9-INK-SEL | 96-02-0 00:00 / 96-02-31 00:00 | 10300     | 0 dol      | Split  |
| C9             | 20003 <=> 20000   | INFINITE  | S-C9-INK-SEL | 96-02-0 00:00 / 96-02-31 00:00 | 1250      | 0 dol      | Split  |
| F9             | ?00001 <=> ?00000 | INFINITE  | S-C9-INK-SEL | 96-02-0 00:00 / 96-02-31 00:00 | 2730      | 0 dol      | Split  |

[Plan Request] [Quote (26)] [Delivery Plan] [Plan Alternates]

The information in the *Quote* layout is as follows:

- *Requested Item* - the name of the item.
- *Requested* - the quantity of the item that has been requested (a range).
- *Max Price* - the maximum price desired by the requestor.
- *Product* - the name of the product requested.
- *Dates* - the range of dates and times the item is available.
- *Available* - the available quantity.
- *List Price* - the list price at which this item is available.
- *Accept* - select this button to make a promise for an order using the ATP items in this row.
- *Split* - select this button to split the order. This button appears when the requested quantity is greater than the available quantity.

Beside each quote is a button which says either *Accept* or *Split*. Table 17 explains these two buttons and their use.

**Table 17: Accept and Split Quote Buttons**

| Button Name is... | WHEN...  | Comments...   |
|-------------------|--|---|
| Accept            | The quote quantity (Available column) is equal to the minimum requested quantity (Requested column), then the <i>Quote</i> button will say <i>Accept</i> . Pressing the <i>Accept</i> button will take the quote and convert it into a promise.  | When this happens, the item request being quoted does not change (i.e. the same item request is selected in the <i>Request</i> tab). Since the selected item (or delivery) request has not changed, the <i>Quote</i> tab will continue to show all the quote options for the request previously quoted. However, since the request has not changed, the exact same list of quotes should be present.  |
| Split             | The quote quantity (Available column) is less than the minimum requested quantity (Requested column), then the <i>Quote</i> button will say <i>Split</i> . Pressing the <i>Split</i> button will take the quote and convert it into a promise, just as will pressing <i>Accept</i> . However, in this case, there will not be enough in the quote to cover the entire request. So the original request will be split into a smaller request which is promised by the quote, and a new request for the remaining unpromised amount. | When this happens, the previously selected (item or delivery) request has been split and the unpromised portion of the original request remains selected. After pressing <i>Split</i> , the <i>Request</i> tab should display two requests in place of the original request (one promised and one unpromised) with the unpromised request being the selected one. The <i>Quote</i> tab should display a new list of quotes for the now selected unpromised request. |

A request need not be *Accepted* to be *Promised*. In fact, in the normal course of events, the process would have these two separate steps with *Promised* performed first. One possible scenario is explained in Table 18 below.

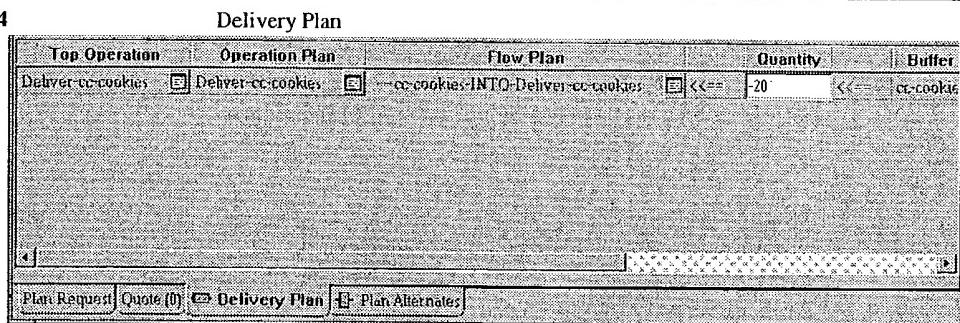
**Table 18: Accepted/Promise Process**

| Stage | Description                     | Comments   |
|-------|---------------------------------|--|
| 1     | Seller creates Request          | On behalf of the customer, the seller creates a request that contains the item, date, quantity, etc.           |
| 2     | Seller examines Request         | The seller examines the request and makes a promise, perhaps with customer input and using quotes.             |
| 3     | Planner plans Promises          | The planner plans all promises, trying to meet all promises.   |
| 4     | Negotiate Unplanned Promise     | Unplanned promise quantities may need to be negotiated with the customer and reduced.                          |
| 5     | Customer <i>accepts</i> Promise | The customer <i>accepts</i> the promise, and the agreement is now binding between the customer and the seller. |

### 3.37.4.6 Delivery Plan

The *Delivery Plan* layout provides information about the delivery plan for the requested item. See FIGURE 114.

FIGURE 114



The direction of the arrows (<<== and ==>) shows the direction of the flow of the item. The information in the *Delivery Plan* layout is as follows:

- *Top Operation* - the name of the topmost operation plan containing the operation plan for the item. Select the button next to the operation plan name to display the *Operation Plan Editor*.
- *Operation Plan* - the name of the operation plan for the item. Select the button next to the operation plan name to display the *Operation Plan Editor*.
- *Flow Plan* - the name of the flow plan for the item. Select the button next to the flow plan name to display the *Flow Plan Editor* for the flow plan.
- *Quantity* - the quantity of the item that is planned.
- *Buffer Plan* - the name of the buffer plan for the buffer where the item is located. Select the button next to the buffer plan name to display the *Buffer Plan Editor*.
- *Item* - the name of the planned item.
- *Dates* - the date and time or range of dates and times for the flow plan.

### 3.37.4.7 Plan Alternates

The *Plan Alternates* layout provides information about alternate plans for the item request, if any are available. An alternate plan may be selected from this layout.

The information in the layout is as follows:

- *Top Operation Plan* - the name of the topmost operation plan containing the operation plan for the item. Select the button next to the operation plan name to display the *Operation Plan Editor*.
- *Super Operation Plan* - the name of the containing operation plan of which this operation is a part. Select the button next to the operation plan name to display the *Operation Plan Editor*.
- *Current Selection* - the name of the currently selected plan.
- *Alternate Operation* - the name of an alternate operation.
- *Description* - a description of the alternate operation.

### 3.37.5 Planning A Request That Is An Actual Order

To plan a request that is an actual order:

| Step | Action   |
|------|--|
| 1    | Display the <i>Request</i> layout. To select the desired order, click in the box next to the delivery request name to place an X there. The item request information for the selected delivery request is displayed in the <i>Plan Request</i> layout. |
| 2    | Display the <i>Quote</i> layout. The ATP information about the item is displayed. See FIGURE 115.  |
| 3    | Select the <i>Accept</i> button for the desired item request. Rhythm makes the promise and automatically adjusts available quantities.   |
| 4    | Display the <i>Plan Request</i> layout. Select the <i>Plan Promise</i> button. Rhythm makes a plan.  |
| 5    | To view information about the plan, select the <i>Delivery Plan</i> layout.  |

FIGURE 115

Quote

| Requested Name | Requested       | Max Price | Product      | Dates                        | Available | List Price |  |
|----------------|-----------------|-----------|--------------|------------------------------|-----------|------------|--|
| C8             | 200 <=> 200     | INFINITE  | P-C8-INK-SEL | 96-1-0 0:00 / 96-12-31 00:00 | 200       | 0 dol      | <input checked="" type="checkbox"/> Accept |
| F8             | 200 <=> 200     | INFINITE  | S-C8-INK-SEL | 96-1-0 0:00 / 96-12-31 00:00 | 201       | 1 dol      | <input checked="" type="checkbox"/> Accept |
| C9             | 20000 <=> 20000 | INFINITE  | P-C9-INK-SEL | 96-1-0 0:00 / 96-32-31 00:00 | 1230      | 0 dol      | <input type="checkbox"/> Split             |
| C9             | 20000 <=> 20000 | INFINITE  | P-C9-INK-SEL | 96-1-0 0:00 / 96-32-31 00:00 | 2730      | 0 dol      | <input type="checkbox"/> Split             |
| F9             | 20000 <=> 20000 | INFINITE  | P-C9-INK-SEL | 96-1-0 0:00 / 96-14-11 00:00 | 5220      | 0 dol      | <input type="checkbox"/> Split             |
| C9             | 20000 <=> 20000 | INFINITE  | P-C9-INK-SEL | 96-1-0 0:00 / 96-32-31 00:00 | 10320     | 0 dol      | <input type="checkbox"/> Split             |
| C9             | 20000 <=> 20000 | INFINITE  | S-C9-INK-SEL | 96-1-0 0:00 / 96-32-31 00:00 | 1230      | 0 dol      | <input type="checkbox"/> Split             |
| F9             | 20000 <=> 20000 | INFINITE  | S-C9-INK-SEL | 96-1-0 0:00 / 96-32-31 00:00 | 2730      | 1 dol      | <input type="checkbox"/> Split             |

Plan Request | Quote (P) | Delivery Plan | Plan Alternative

### 3.37.6 Planning A Request That Is From A Forecast

To plan a request from a forecast:

| Step | Action  |
|------|---|
| 1    | Display the <i>Request</i> layout. To select the desired forecast request, click in the box next to the request name to place an X there. The item request information for the selected request is displayed in the <i>Plan Request</i> layout. |
| 2    | Select the <i>Plan Request</i> layout.  |
| 3    | Select the <i>Plan Request</i> button. Capacity is reserved for this forecast.  |

To promise the plan, select the *Promise As Planned* button. The planned quantity is now allocated to the seller.

### 3.37.7 Request / Promise

Demand between sites is placed formally as a request, for which a promise is received. The promising site makes plans to fulfill the promises. The requesting site makes plans assuming the promises will be fulfilled. Requests and promises have expiration dates.

The request / promise logic defines agreements between sites managed by separate groups of decision makers. A promise models a commitment to supply a set of items. Once accepted, the promise represents a commitment by the requestor to accept and consume the supplied items.

### 3.37.8 Displaying a Request

To display the *Request Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Requests/Promises</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .                                       |
| 4    | Select <i>Order Entry</i> from the list of <i>Reports/Activities for Requests/Promises</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Request Editor</i> displays.   |
| 6    | (To view the <i>Request Editor</i> for a different plan, click the <i>Choose</i> button and select a plan from the displayed list.) |

### 3.37.9 Generating Requests Between Sites

To generate requests between sites, do the following:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item, then <i>Promise As Planned</i> .  |
| 7    | Check for LINK sites. A raw material buffer might be in multiple locations and have a REQUEST_FIXED supplying operation for each buffer. When the planning is done, the buffers get supplied the required material. Requests exist on the SUPPLIER site. |
| 8    | Select the <i>Requests</i> tab.  |
| 9    | Select the button next to a request name. The <i>Request Editor</i> is displayed.  |

### 3.37.10 Cancelling a Request

A cancelled request is one whose quantity is 0 or whose delivery date is the infinite future. Request / promises do not disappear when their request quantities go to 0 or their request dates go to infinite future. They are automatically deleted only when forecasts expire. They can also be manually deleted by the user. To cancel and delete a request, do the following:

| Step | Action   |
|------|--|
| 1    | Open the <i>Request Editor</i> .   |
| 2    | Set the requested <i>Quantity</i> to 0.  |
| 3    | Return to the <i>Site Plan Editor</i> .  |
| 4    | Select the <i>File / Update All Reports</i> menu item to verify that the request does change without disappearing. |

## 3.38 Resource

### 3.38.1 Description

A **Resource** models the capacity to perform operations. This includes machines, tools, fixtures, labor, trucks, molds, dies, masks, and other things that are used by operations in causing flow between buffers. See FIGURE 116. It also includes storage space, containers, racks, and other things that are used to hold items within buffers or during operations. Each resource has a skill group.

A resource has extensions such as:

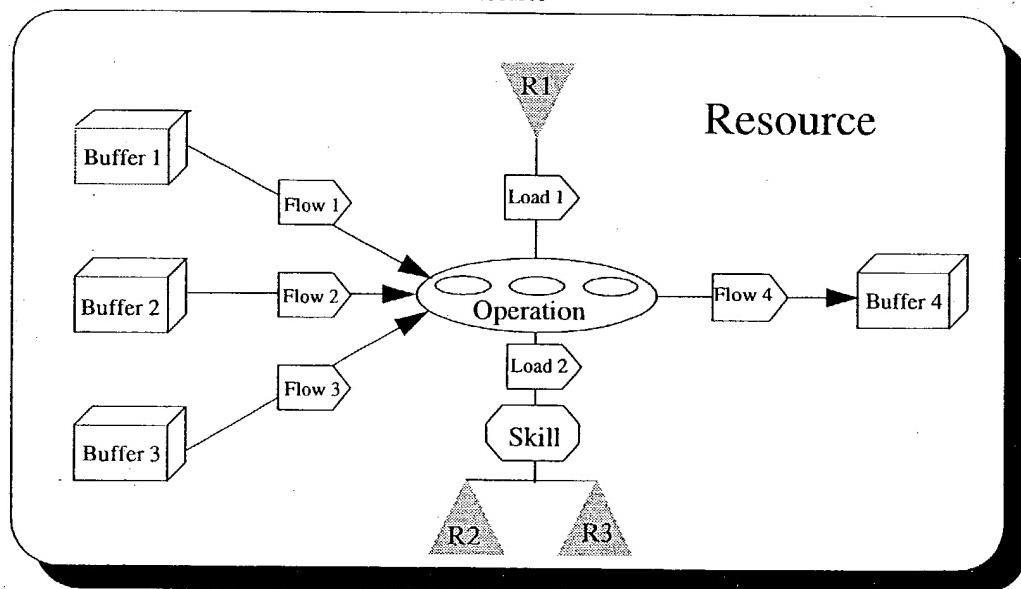
- Load\_Policy
- Efficiency
- Maintenance - defines how maintenance is specified for a given resource.
- Size - defines the size limits on the loads that can be placed on a resource.
- Variability - models the uncertainties and creates pads before and after the operation performed at this resource.

A resource also has operations such as:

- transit operation
- skill operation
- setup operation

FIGURE 116

FLO Network Model - Resource

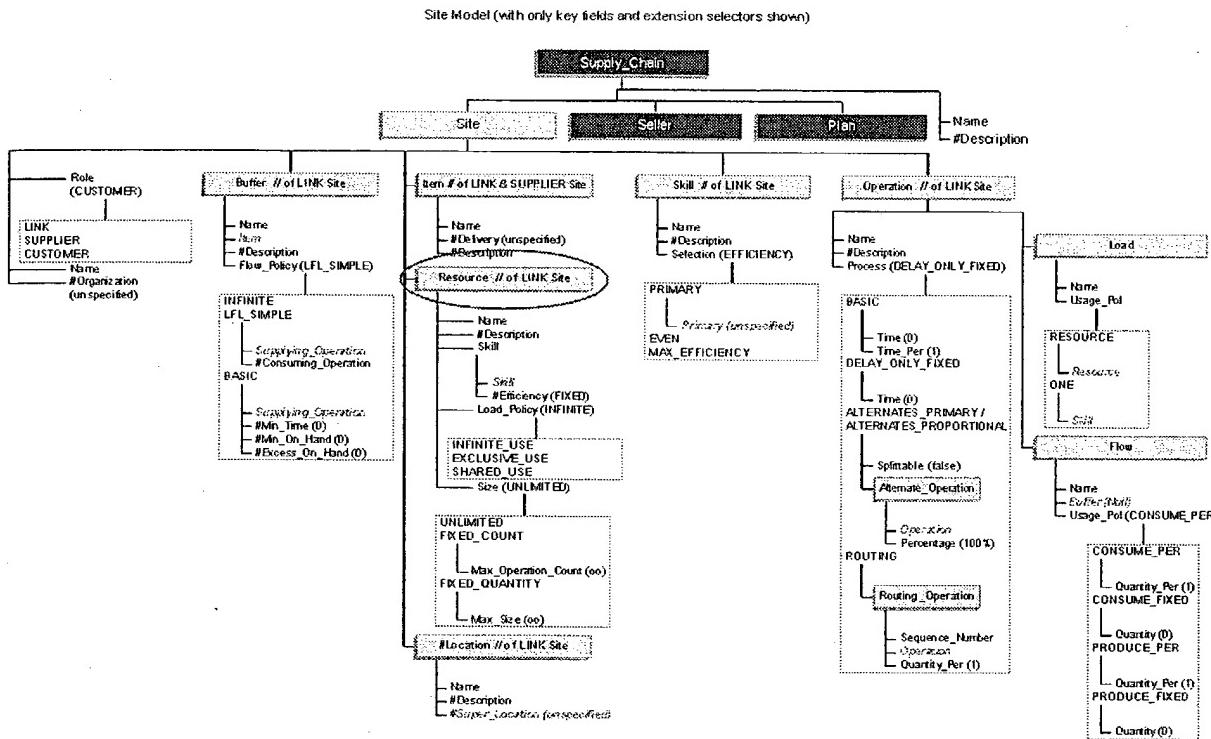


### 3.38.2 Model Structure

FIGURE 117 shows the relationship of the model to its parent model and submodels.

**FIGURE 117**

Model Structure



### 3.38.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Resource* report.

Parent Model: Site

Submodels: Resource\_Skill, Resource\_Setup\_Order, Resource\_Blocks

### 3.38.4 Simultaneous Resources

Simultaneous resource sets contain two or more of:

- machine
- tool
- operator
- fixture
- conveyor

The efficiencies of simultaneous resources are multiplied together. For instance, if there is a lazy 50% efficiency worker using a hard to use tool that is 10 times slower than the normal tool (so its efficiency is 10%), the resultant operation efficiency is 5%. Give the lazy worker a normal tool and his efficiency is 50%.

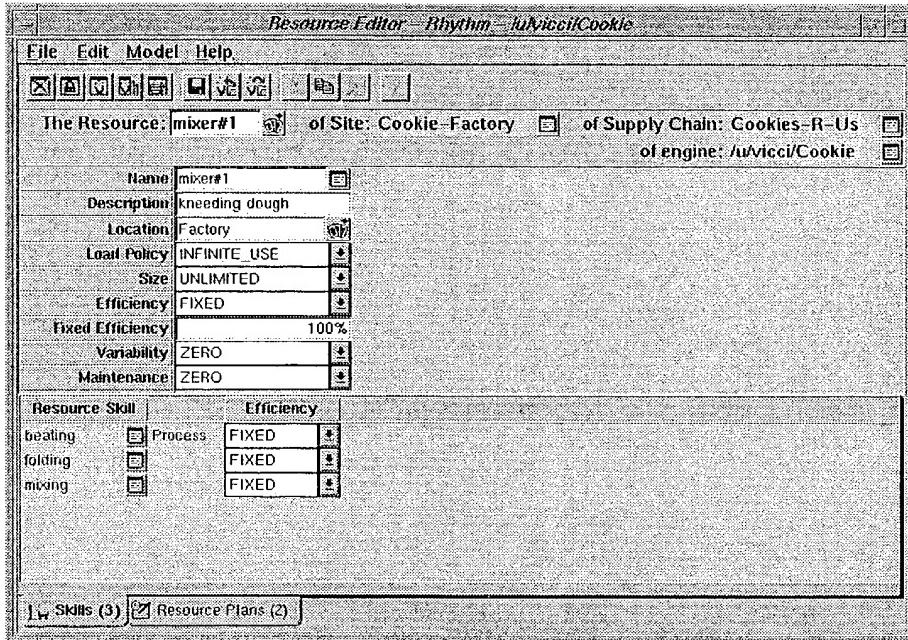
### 3.38.5 Displaying a Resource

To display the *Resource Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> .    |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.                              |
| 6    | Select the <i>Sites</i> tab.  |
| 7    | Select the button next to a site name. The <i>Site Editor</i> is displayed.                         |
| 8    | Select the <i>Resources</i> tab.  |
| 9    | Select the button next to a resource name. The <i>Resource Editor</i> is displayed. See FIGURE 118. |
| 10   | (To add a new resource, select the <i>Model / New</i> menu item.)                                   |

FIGURE 118

Resource



### 3.38.6 Changing Usage Policy

To change the usage policy:

| Step | Action  |
|------|---|
| 1    | Edit any load (display a <i>Load</i> report).                                       |
| 2    | If the load has an unspecified skill, edit it to any of the available skills.       |
| 3    | If the load has an unspecified resource, edit it to any of the available resources. |

### 3.38.7 Editing Pooled Resources

A pooled resource is a group of resources which are identical to each other. The capacity of an aggregate resource is the aggregation of those sub-resources. The sub-resources in an aggregate may not be exactly the same. Unlike pooled resources, each sub-resource in an aggregate resource can have its own efficiency and calendar. To edit N identical resources (pooled resources) over time with one Resource model, use the SHARED\_USE load\_policy extension of the Resource model in conjunction with the Calendar size. This is useful for the following instances:

- bringing a machine down
- buying a new machine

### 3.38.8 Tying a Calendar to a Resource

Rhythm can model changes in the efficiency of resources over time by using calendars. Calendars can model differences due to learning curves, depreciation, resource upgrades, differences in shifts, and more. See the *Calendar* section in this manual for more information.

To tie a calendar to a resource:

| Step | Action   |
|------|--|
| 1    | In the <i>Resource Editor</i> , change <i>Efficiency</i> to CALENDAR. When the change is made, the <i>Fixed Efficiency</i> field changes to <i>Efficiency Calendar</i> , with a value of [ <i>unspecified</i> ]. |
| 2    | Select [ <i>unspecified</i> ] and type in the name of the desired calendar.  |
| 3    | Press Enter.   |
| 4    | Select <i>File/Update Report</i> .   |

### 3.39 Resource Plan

#### 3.39.1 Description

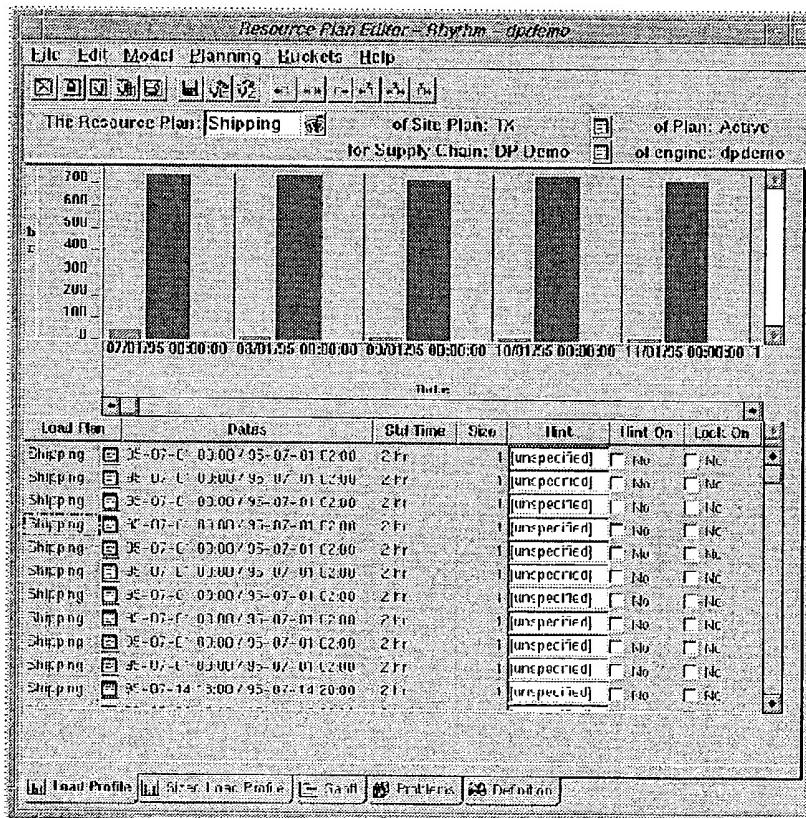
The *Resource Plan* gives basic information about the resource being planned. It drills down from the whole time horizon of the plan to one bucket of time. From there information about a specific load plan or problem can be viewed.

The *Resource Plan* models such things as machines and tools used by operations. See FIGURE 119. The fields of a resource plan specify:

- resource being planned
- the average efficiency and efficiency profile for the resource
- loads currently planned on this resource
- problems detected with this resource plan

FIGURE 119

Resource Plan



### **3.39.2 Model Relationships**

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Resource Plan* report.

Parent Model: Site\_Plan

### 3.39.3 Resource Plan Editor

The *Resource Plan Editor* has four sections of information. The four sections contain the following information:

- Basic resource information
- Plan time horizon bar charts
- Time bucket details
- Load plan details

The top section of the *Resource Plan Editor* has the basic information about the buffer. To obtain more detailed information about the resource, select the report button next to the resource name. This displays the *Resource Editor*.

### 3.39.4 Load Bar Charts

The second section of the *Resource Plan Editor* gives an overview of the load and problems on the resource. It contains several bar charts in a tabbed layout. Select each tab to display each chart.

These charts show three bars in each time bucket over the plan horizon. The bucket size can be changed to view different time periods, such as whole horizon, quarters, months, or weeks. To change the bucket size, select *Buckets* in the menubar to display a list of choices. When a different time horizon is selected, the information on the bar chart changes.

The bars in the *Capacity* chart show the standard hours, which are hours adjusted according to the resource's planned efficiency, for each time bucket for the following three items:

- Load planned on the resource
- Capacity the resource is planned to be available
- Problems with the current plans on the resource

The bars in the *Availability* chart show the actual hours for each time bucket for the following three items:

- Load planned on the resource
- Total hours that the resource is planned to be available
- Total hours of problems with the current plans on the resource

The bars in the *Size Capacity* chart show the standard hours for each time bucket for the following three items:

- Load multiplied by the size of the load that is planned on the resource
- Capacity (in hours) multiplied by the size limits that the resource is planned to be available
- Standard hours multiplied by the size of problems with the current plan on the resource

The bars in the *Size Availability* chart show the actual hours for each time bucket for the following three items:

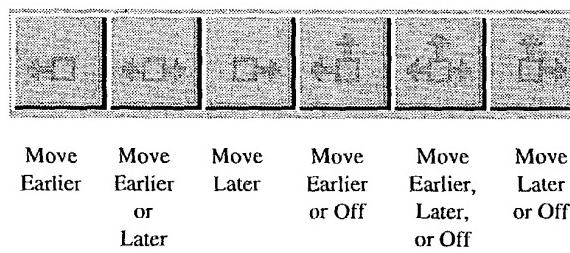
- Load multiplied by the size of the load that is planned on the resource
- Total hours available multiplied by the size limits that the resource is planned to be available
- Actual hours multiplied by the size of problems with the current plans on the resource

When a load bar is selected in a plan (e.g. *Resource Plan*), the planning tools (See FIGURE 120) may be used to balance the load in the bucket with the available capacity.

When a problem bar is selected in a plan, the planning tools may be used to resolve the problems.

**FIGURE 120**

Planning Tools



Note that if the plan has zero load (no operations planned that use it), there are no problems and only one of the three bars are displayed for each time bucket.

### 3.39.5 Time Bucket Details

The third section of the *Resource Plan Editor* displays information about a particular time bucket from a bar chart. Select a bar in a bar chart to select a time bucket, and information about that bucket is displayed in the selected layout in this section. For example, if a one month time period is selected in a capacity bar chart in the second section, then the *Load Gantt* chart in this section shows the individual load plans that are in that bucket.

### 3.39.6 Load Plan Details

The bottom layout in the *Resource Plan Editor* provides more information about a selected load plan in the third section. Select a load plan in the third section to select it, and the load plan information is displayed in the bottom section. To display more detailed information about a load plan, select the report button next to the load plan name.

### 3.39.7 Plan Adjustments

The planning toolbar can be used to specify small automated plan adjustments on what is seen. Some of the adjustments that can be made are:

- Balance buckets of load with the capacity
- Eliminate buckets of problems
- Move specific load plans
- Resolve specific problems

### 3.39.8 Help Information

To display a description of any of the charts or other information provided on the *Resource Plan Editor*, click anywhere in the selected layout, then select *Help* in the menubar to display the *Help* menu. In the *Help* menu, choose *On Layout*.

### 3.39.9 Displaying a Resource Plan

To display the *Resource Plan Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Resources</i> (in the <i>FLO Network</i> tree) from the list of <i>Domains</i> .    |
| 4    | Select <i>Resource Plan Editor</i> from the list of <i>Reports/Activities for Resources</i> . |
| 5    | Click <i>Display Report</i> . The <i>Resource Plan Editor</i> displays.                       |
| 6    | (To add a new resource plan, select the <i>Model / New</i> menu item.)                        |

### 3.39.10 Sequencing of Manufacturing Orders

To see the sequencing of manufacturing orders on a selected resource, select the *Load Gantt Chart* tab. To fill in the more detailed information in the *Plan Dates* table at the bottom of the editor, select a Gantt bar in the chart.

When an individual bar is selected, the associated *Load Plan* is displayed. (The *Load Plan* is passed to a lower layout.)

Event bindings and commands on the *gantt\_bar* reference the *Load Plan* of that bar:

|    |  |
|----|--|
| <- | = set_hint("end before <current-start>") |
| >  | = set_hint("start after <current-end>")  |
| ^  | = MOVE_OFF                               |

### 3.39.11 Editing Usage Policy

To edit usage policy:

| Step | Action   |
|------|--|
| 1    | Display the <i>Resource Plan Editor</i> .  |
| 2    | Select the <i>Planning / Satisfy All Requests</i> menu item.   |
| 3    | Select the <i>Load Gantt</i> tab.  |
| 4    | Repeatedly change the usage policy of loads of operations in the chart from RESOURCE to ONE. This alters the resource from the resource name to unspecified. This demonstrates that populating resource results in a default usage policy of RESOURCE. |
| 5    | Update the Gantt chart to see that the operations leave the resource.  |

### 3.39.12 Editing Number and Efficiency of Pooled Resources

To edit the number and efficiency of pooled resources through the user interface, first note the *Availability* load profile and the *Capacity* profile for that resource:

| Step | Action   |
|------|--|
| 1    | Display the <i>Resource Plan Editor</i> .  |
| 2    | Note the <i>Availability</i> load profile and the <i>Capacity</i> profile for that resource. |

Change the *Max Count* of the resource:

- Verify that the load policy of the resource is SHARED\_USE.
- Select the button next to the resource name. The *Resource Editor* is displayed.
- Delete the existing number of pooled resources and overwrite it.

The efficiency of the resource can be edited by the same procedure.

Note that the load policy of the resource does not affect the editability of efficiency, but the resource should have a load policy of SHARED\_USE for *Max\_Count* to be editable.

Note that Rhythm will not alter the available capacity hours based on the efficiency of a resource. Instead, the task time depends on the efficiency of the resource. For example, decreasing the efficiency of a resource from 100% to 50% will not decrease the available capacity, but will cause a 2 hour task (under 100% resource efficiency) to run for 4 hours at 50% resource efficiency.

### 3.39.13 Changing Buckets

To change buckets in the *Load Gantt* chart:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.                                       |
| 7    | Select the <i>Utilization</i> button.  |
| 8    | Select the <i>Resources</i> tab.   |
| 9    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.  |
| 10   | Select the button next to the resource name. The <i>Resource Editor</i> is displayed.  |
| 11   | Change the <i>Fixed Efficiency</i> to 0.3 (30%), then quickly kill the report by using <Control-W> (do not wait on the server response). |
| 12   | In the <i>Resource Plan Editor</i> , select the <i>Load Gantt</i> tab even though it is already selected.                                |
| 13   | Select the <i>Buckets / Whole Horizon</i> menu item.   |

**3.39.14 Balancing a Resource**

To balance a resource:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.   |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.  |
| 7    | Select the <i>Utilization</i> button.   |
| 8    | Select the <i>Resources</i> tab.  |
| 9    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.   |
| 10   | Select the button next to the resource name. The <i>Resource Editor</i> is displayed.   |
| 11   | Change the <i>Fixed Efficiency</i> to 0.01 (1%). This compensates for the lack of orders by removing capacity.  |
| 12   | Change the <i>Load Policy</i> to EXCLUSIVE_USE.   |
| 13   | In the <i>Resource Plan Editor</i> , select the <i>Planning / Satisfy All Requests</i> menu item. Note that the load bars in the <i>Capacity</i> chart become balanced.   |
| 14   | In the <i>Plan Editor</i> , select the <i>Active Strategies</i> tab, then select the <i>Run</i> button for the <i>Master Strategy</i> to solve all but the request and promise problems (should take only one run, but might require two runs). |

### 3.39.15 Moving Load Plans

To move individually selected load plans:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.   |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.  |
| 7    | Select the <i>Resources</i> tab.  |
| 8    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.   |
| 9    | Change the <i>Load Policy</i> to EXCLUSIVE_USE.   |
| 10   | Select the <i>Buckets / Whole Horizon</i> menu item to show the entire time horizon being planned.  |
| 11   | Select the planning tools (arrow icons in the planning toolbar) to make sufficient room for a load plan to move-in (left-arrow), then select the left-arrow. The load plan should move its full length earlier. If the load plan is too close to the plan start time, it fails to move. |

### 3.39.16 Diminishing Resource Problems

The MAX\_EFFICIENCY selection extension of the Skill model calculates an average over the plan horizon. Selection is therefore prevented from reselecting the move-off resource just because the alternate has zero efficiency at the given load plan's period.

Uninterruptible process operations fail to move off if the located positive efficiency period is not large enough to accommodate the load plan. Rhythm prefers for the move-off to fail so that it can try moving off other (smaller or interruptible) operations.

To diminish a problem by doing move-off of operations:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.  |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.   |
| 7    | Select the <i>Resources</i> tab.   |
| 8    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.  |
| 9    | Change a resource's <i>Efficiency</i> to be CALENDAR.  |
| 10   | Edit the resource's calendar to be low efficiency.   |
| 11   | Select the <i>Buckets / Whole Horizon</i> menu item to show the entire time horizon being planned.   |
| 12   | Select the <i>Problems</i> tab.  |
| 13   | Repeatedly select the move-off planning tool (arrow icon in the planning toolbar that appears as < ^ >) to diminish the problem. The problem diminishes and grows, since there are uninterruptible processes. It seems to diminish up to a point and then fails to get much better or worse. |

### 3.39.17 Setting Fixed Efficiency

To set the fixed efficiency of a resource:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.   |
| 6    | Select the <i>Planning / Satisfy All Requests</i> menu item to plan the forecast requests read in.  |
| 7    | Select the <i>Resources</i> tab.  |
| 8    | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.   |
| 9    | Select the button next to the resource name. The <i>Resource Editor</i> is displayed.   |
| 10   | Change the <i>Fixed Efficiency</i> to 0.32 (32%).   |
| 11   | In the <i>Plan Editor</i> , select the <i>Active Strategies</i> tab, then select the <i>Run</i> button for the <i>Master Strategy</i> .                               |
| 12   | In the <i>Resource Editor</i> , change the <i>Fixed Efficiency</i> to 0.  |
| 13   | In the <i>Resource Plan Editor</i> , select the <i>Load Gantt</i> chart tab. Changes to <i>Fixed Efficiency</i> change the contents of what the Gantt chart displays. |

### 3.39.18 Removing Overload Problems by Dragging

Overload problems can be removed manually by dragging bars in the *Load Gantt* chart of the *Resource Plan Editor*.

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> .            |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.                              |
| 6    | Select the <i>Planning / Satisfy All Requests</i> then the <i>Promise As Planned</i> menu items. |
| 7    | Display the <i>Plan Editor</i> .   |
| 8    | Select the <i>Site Plans</i> tab.  |
| 9    | Select the button next to a site plan name. The <i>Site Plan Editor</i> is displayed.            |
| 10   | Select the <i>Resources</i> tab.   |
| 11   | Select the button next to a resource plan name. The <i>Resource Plan Editor</i> is displayed.    |
| 12   | Select an operation plan in the <i>Load Gantt</i> chart, and drag it to remove it.               |
| 13   | Select the <i>Problem Gantt</i> chart to view problems. They should have disappeared.            |

### 3.39.19 Alternate Resources

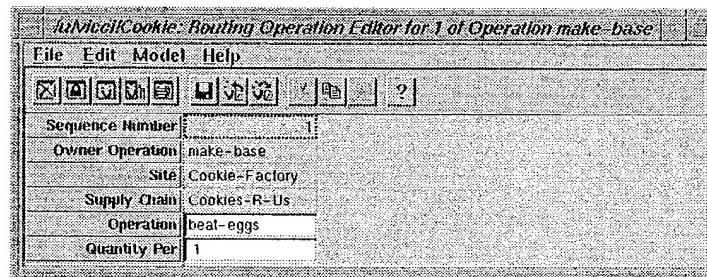
Changing to alternate resources is the setting of a load plan's *Resource Plan*. It can be set, and is able to propagate plan changes.

### 3.40 Routing Operation

The *Routing Operation Editor* models a sequenced sub-operation of a routing operation. See FIGURE 121

**FIGURE 121**

Routing Operation

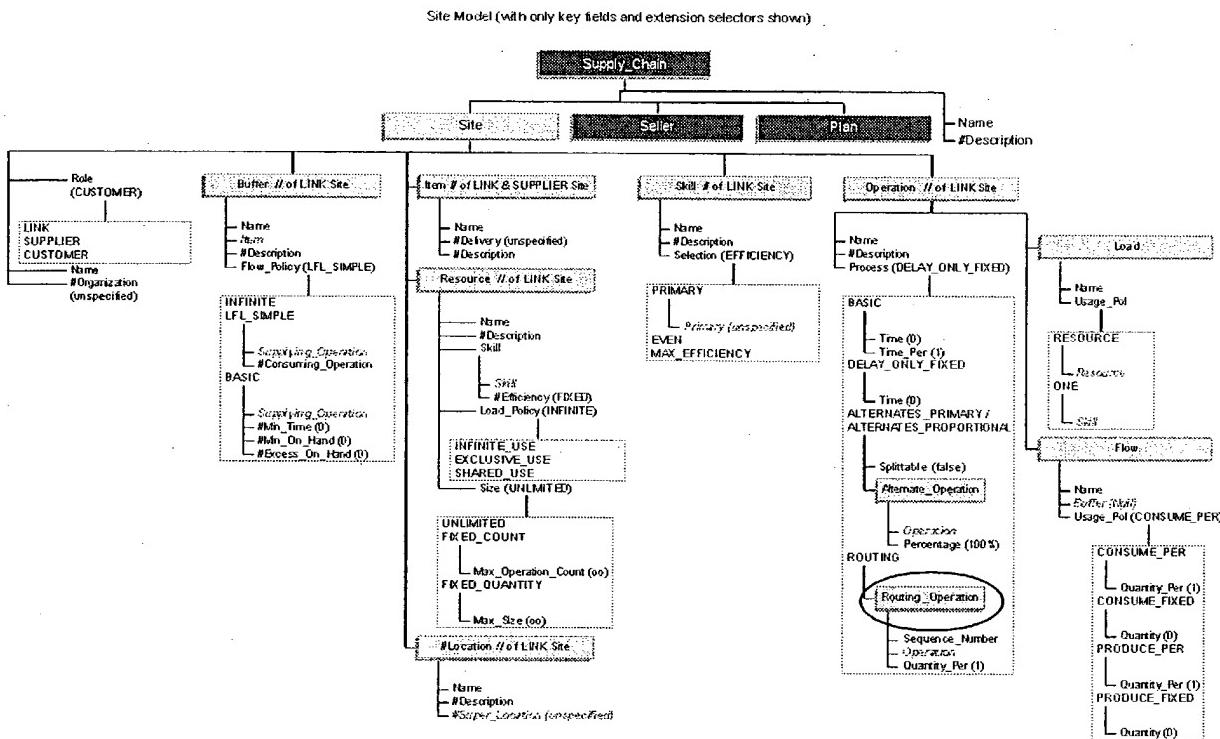


### 3.40.1 Model Structure

FIGURE 122 shows the relationship of the model to its parent model and submodels.

FIGURE 122

Model Structure



### 3.40.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Routing Operation* report.

Parent Model: Operation

### 3.40.3 Modeling a Process

To display the *Routing Operation Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> .                             |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.   |
| 6    | Select the <i>Sites</i> tab.   |
| 7    | Select the button next to a site name. The <i>Site Editor</i> is displayed.  |
| 8    | Select the <i>Operations</i> tab.  |
| 9    | Select the <i>Edit / Find</i> menu item, and search for the first operation with a process extension of ALTERNATES_PRIMARY.  |
| 10   | Select the button next to that operation name. The <i>Operation</i> editor is displayed.                                     |
| 11   | Select the <i>Routing Sub Operations</i> tab.  |
| 12   | Select an operation name, then select the <i>Model / Editor</i> menu item. The <i>Routing Operation Editor</i> is displayed. |

## 3.41 Seller

### 3.41.1 Description

A *Seller* can model a sales person, group, channel, territory, or organization. It represents the responsibility for forecasting demand, committing to sales, managing allocations, taking orders, and promising orders.

Sellers may take requests from one site or multiple sites for items supplied by one site or several different sites. It manages the requests and promises made between those sites. A seller can act as an agent of the supplying site and make promises for those sites.

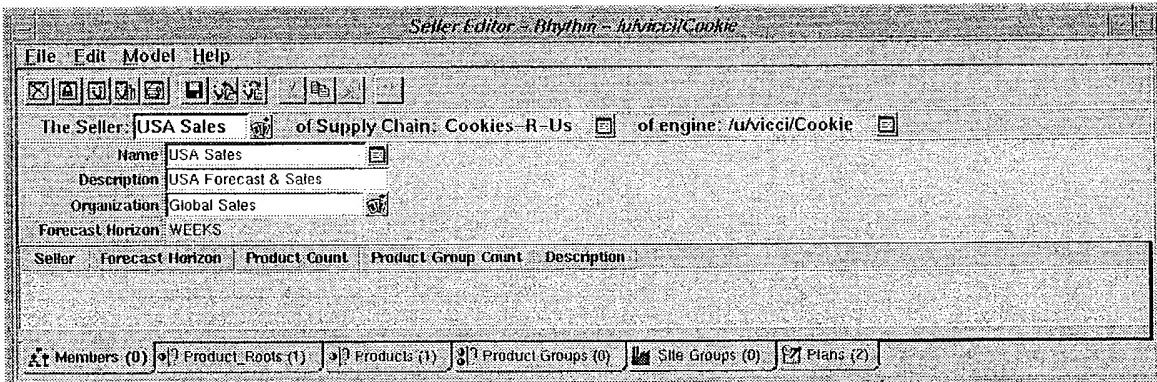
Sellers can manage requests and promises for one product or many products. Products can be defined for certain customer(s), certain Item(s), certain order lead time, certain price, and so on. Each product can be forecasted independently, or grouped with other products into product groups.

Sellers can form a hierarchy. Each seller can be a member of another seller, its organization. Allocations can be made to any level in the hierarchy. Sellers can use allocations to themselves or any of their organizations.

The *Seller Editor* is used for modeling products and forecasts. See FIGURE 123. The products in a seller can be used by its member sellers.

**FIGURE 123**

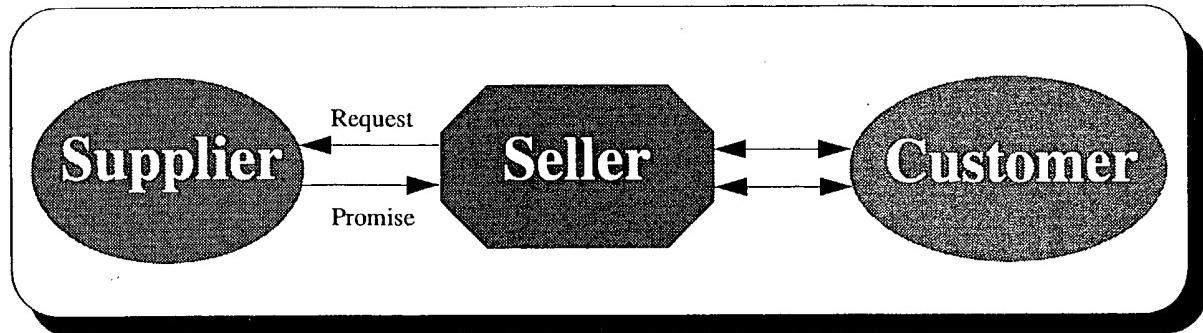
**Seller**



The customer generates requests. Sales does a forecast, then generates a forecast request of the seller (or channel). The seller then determines the allocation. The seller requests from the LINK site (supplier). The LINK site sends promises back to the seller. For a top seller, there is no available to promise (ATP) because there cannot be a forecast for a top seller. See FIGURE 124. See Demand Management in the Rhythm User's Manual for additional details.

FIGURE 124

Requests and Promises

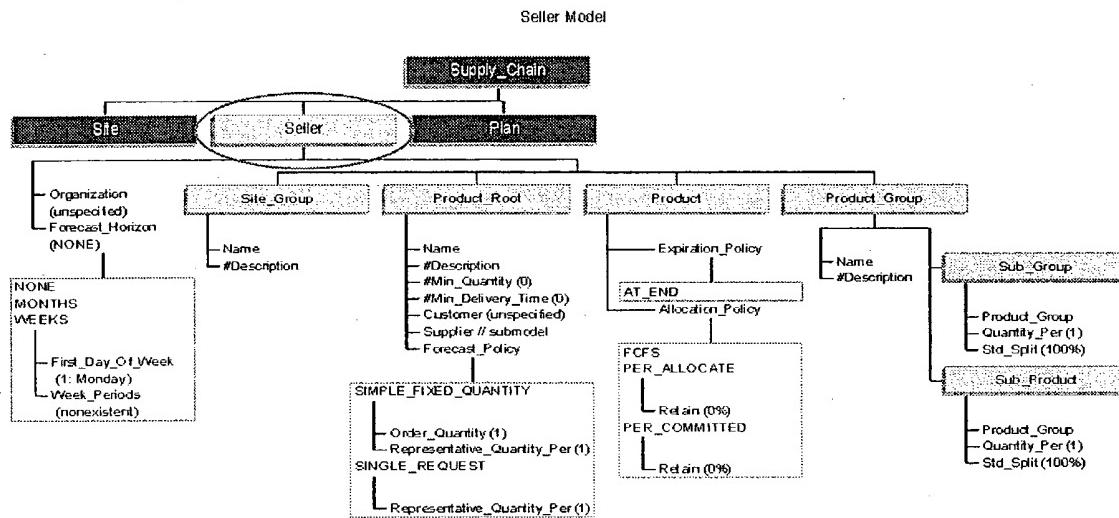


### 3.41.2 Model Structure

FIGURE 125 shows the relationship of the model to its parent model and submodels.

FIGURE 125

Model Structure



### 3.41.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Seller* report.

Parent Model: Supply\_Chain

Submodels: Site\_Group, Product\_Root, Product, Product\_Group

### 3.41.4 Displaying a Seller

To display the *Seller Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .                                     |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> . |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.                           |
| 6    | Select the <i>Sellers</i> tab.   |
| 7    | Select the button next to a seller name. The <i>Seller Editor</i> is displayed.                  |
| 8    | (To add a new seller, select the <i>Model/New</i> menu item.)                                    |

## 3.42 Seller Plan

### 3.42.1 Description

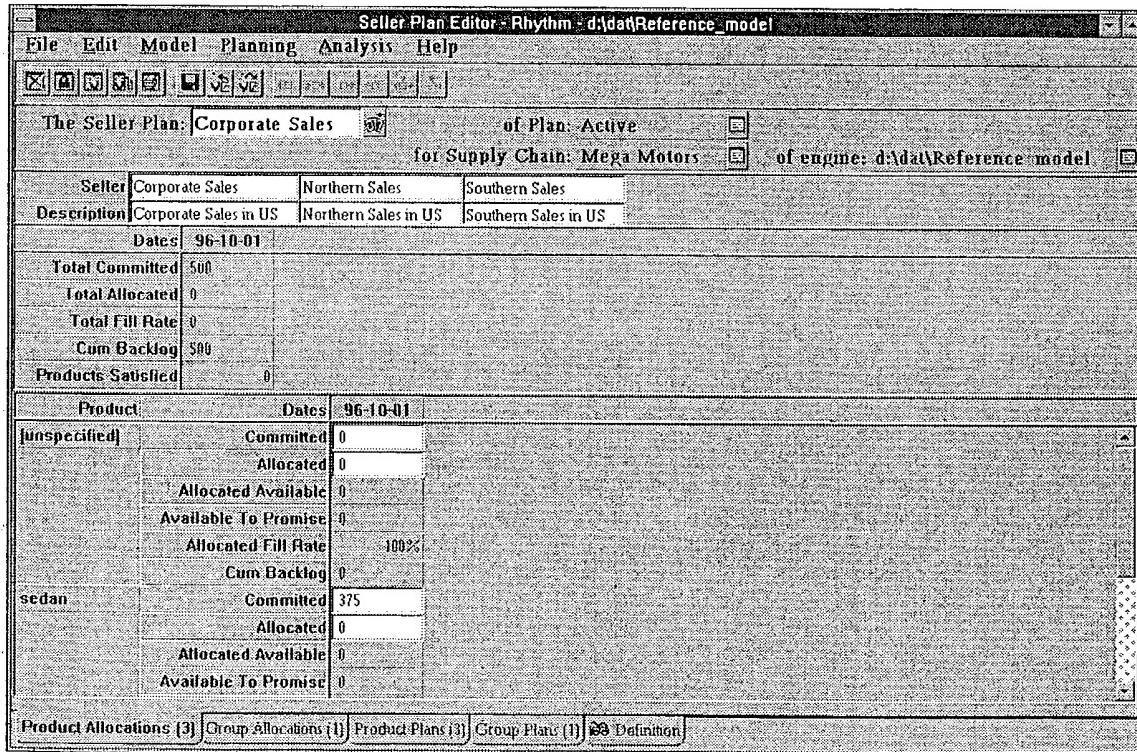
The *Seller Plan Editor* provides access to the seller plans. See FIGURE 126. A seller plan models the activities of the seller and its interactions with the sites. Sellers:

- generate forecasts
- commit to selling some or all of forecast
- receive allocations from sites
- manage requests from customers
- manage promises to customers within ATP

The seller plan has a forecast for each product and product group that this seller sells. Each forecast contains one forecast entry for each period. Forecast entries specify forecasted committed, and allocated amounts for the forecast's corresponding product or product group for that period.

FIGURE 126

Seller Plan

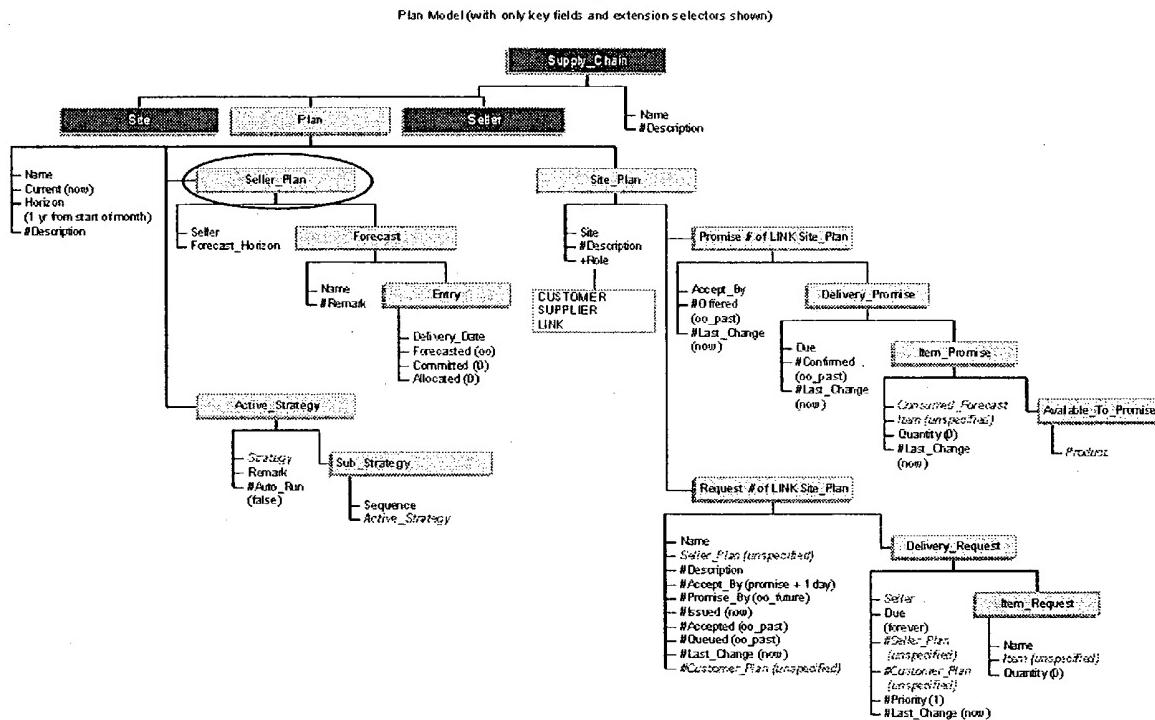


### 3.42.2 Model Structure

FIGURE 127 shows the relationship of the model to its parent model and submodels.

FIGURE 127

Model Structure



### 3.42.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Seller Plan* report.

Parent Model: Plan

Submodels: Forecast

#### 3.42.4 Displaying a Seller Plan

To display the *Seller Plan*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Seller</i> (in <i>Demand</i> tree) from the list of <i>Domains</i> .   |
| 4    | Select <i>Seller Plan Editor</i> from the list of <i>Reports/Activities for Sellers</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Seller Plan Editor</i> displays.  |
| 6    | Note the sub-sellers for each seller   |
| 7    | Note the committed forecast for each product. The committed value for a seller obeys the following rule:<br>$\text{committed} = \max(\text{committed}, \text{members\_committed})$ |
| 8    | (To add a new seller plan, select the <i>Model / New</i> menu item.)   |

#### 3.42.5 Tracking Allocation

To track allocation to the top seller, a dummy sub-seller must be created. The dummy sub-seller may then have a committed value which is aggregated into the top seller's committed value using the maximum rule:

$$\text{committed} = \max(\text{committed}, \text{members\_committed})$$

For a top seller, there is no available to promise (ATP) because there cannot be a forecast for a top seller.

### 3.43 Site

#### 3.43.1 Description

The **Site Editor** models an organizational unit to be planned. A site could correspond to a plant, to a portion of a plant, to several plants, or to a plant, warehouses, distribution centers, and stores. The site is not a physical division, but rather an organizational one. It defines a portion of the supply chain that is planned and controlled by one team of decision makers. See FIGURE 128.

FIGURE 128

Site

| Name         | Engine Supply | Description             | Delivery Name | Organization         | Delivery Phone        | Role           | Delivery Fax | Managed                             | Delivery Address | Tax ID                | Delivery City | Delivery State         | Delivery Country         | Delivery Postal Code         | Billing Name         | Billing Phone         | Billing Fax         | Billing Address         | Billing City         | Billing State         | Billing County         | Billing Postal Code         |  |
|--------------|---------------|-------------------------|---------------|----------------------|-----------------------|----------------|--------------|-------------------------------------|------------------|-----------------------|---------------|------------------------|--------------------------|------------------------------|----------------------|-----------------------|---------------------|-------------------------|----------------------|-----------------------|------------------------|-----------------------------|--|
| <b>Site:</b> | Engine Supply | <b>of Supply Chain:</b> | Mega Motors   | <b>of engine:</b>    | d:\datReference_model |                |              | <input checked="" type="checkbox"/> |                  |                       |               |                        |                          |                              |                      |                       |                     |                         |                      |                       |                        |                             |  |
| <b>Name:</b> | Engine Supply | <b>Description:</b>     | Delivery Name | <b>Organization:</b> | Delivery Phone        | <b>Role:</b>   | Delivery Fax | <b>Managed:</b>                     | Delivery Address | <b>Tax ID:</b>        | Delivery City | <b>Delivery State:</b> | <b>Delivery Country:</b> | <b>Delivery Postal Code:</b> | <b>Billing Name:</b> | <b>Billing Phone:</b> | <b>Billing Fax:</b> | <b>Billing Address:</b> | <b>Billing City:</b> | <b>Billing State:</b> | <b>Billing County:</b> | <b>Billing Postal Code:</b> |  |
| <b>Site:</b> | Engine Supply | <b>Role:</b>            | LINK          | <b>Managed:</b>      | Yes                   | <b>Tax ID:</b> |              | <b>Category:</b>                    |                  | <b>Delivery City:</b> |               | <b>Delivery State:</b> |                          | <b>Delivery Country:</b>     |                      | <b>Billing Name:</b>  |                     |                         |                      |                       |                        |                             |  |

Site    Role    Managed    Category    Delivery City    Delivery State    Delivery Country

Members [0] Locations [1] Items [2] Buffers [2] Resources [0] Skills [0] Operations [8] Plans [1]

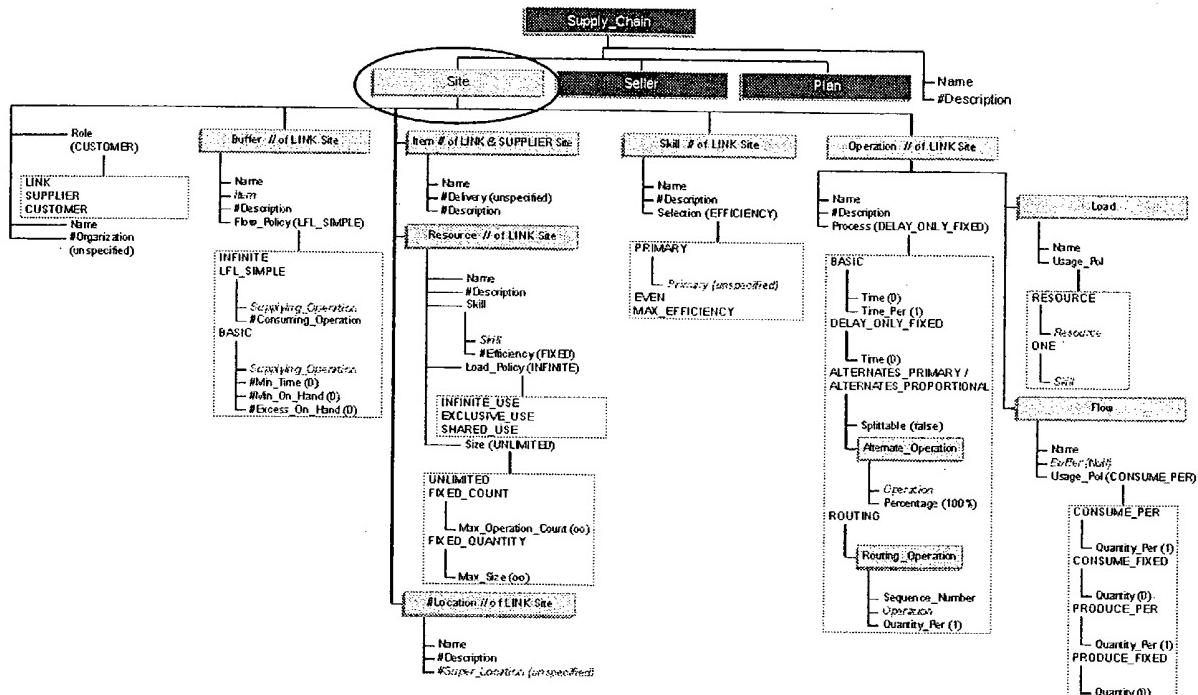
### 3.43.2 Model Structure

FIGURE 129 shows the relationship of the model to its parent model and submodels.

**FIGURE 129**

Model Structure

Site Model (with only key fields and extension selectors shown)



### 3.43.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the Site report.

Parent Model: Supply\_Chain

Submodels: Location, Buffer, Resource, Skill, Operation, Configuration

#### 3.43.4 Displaying a Site

To display the *Site Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main</i> report.  |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .                                     |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> . |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.                           |
| 6    | Select the <i>Sites</i> tab.   |
| 7    | Select the button next to a site name. The <i>Site Editor</i> is displayed.                      |
| 8    | (To add a new site, select the <i>Model / New</i> menu item.)                                    |

#### 3.43.5 Checking Accuracy of Data Read in from Promise

The information read into Rhythm forms the basis of the planning process for which the planner uses Rhythm. This static information is accessed through the site model. To check the accuracy of data read in from promise:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Display the <i>Supply Chain Editor</i> . The <i>Sites</i> tab lists all customers of the supply chain. The <i>Sellers</i> tab lists sellers. The <i>Field Errors</i> tab lists inconsistencies in the data read into Rhythm. Not all of these errors are fatal. The <i>Calendars</i> tab lists the unit capacity calendars for relevant resources.   |
| 3    | Select the <i>Sites</i> tab.   |
| 4    | Select the button next to a site name (with a Role of LINK). The <i>Site Editor</i> is displayed. The <i>Items</i> tab contains bill of materials. The <i>Operations</i> tab lists routings; additional information about any specific routing can be displayed by selecting the button next to the operation name. The <i>Resources</i> tab lists resources; additional information about any specific resource can be displayed by selecting the button next to the resource name. |

## **3.44 Site Plan**

---

### **3.44.1 Description**

The *Site Plan Editor* models the plans for a site. A site plan has a role extension selector which may be LINK, SUPPLIER, or CUSTOMER. The contents of a site plan are determined by its role. The fields of the site plan are:

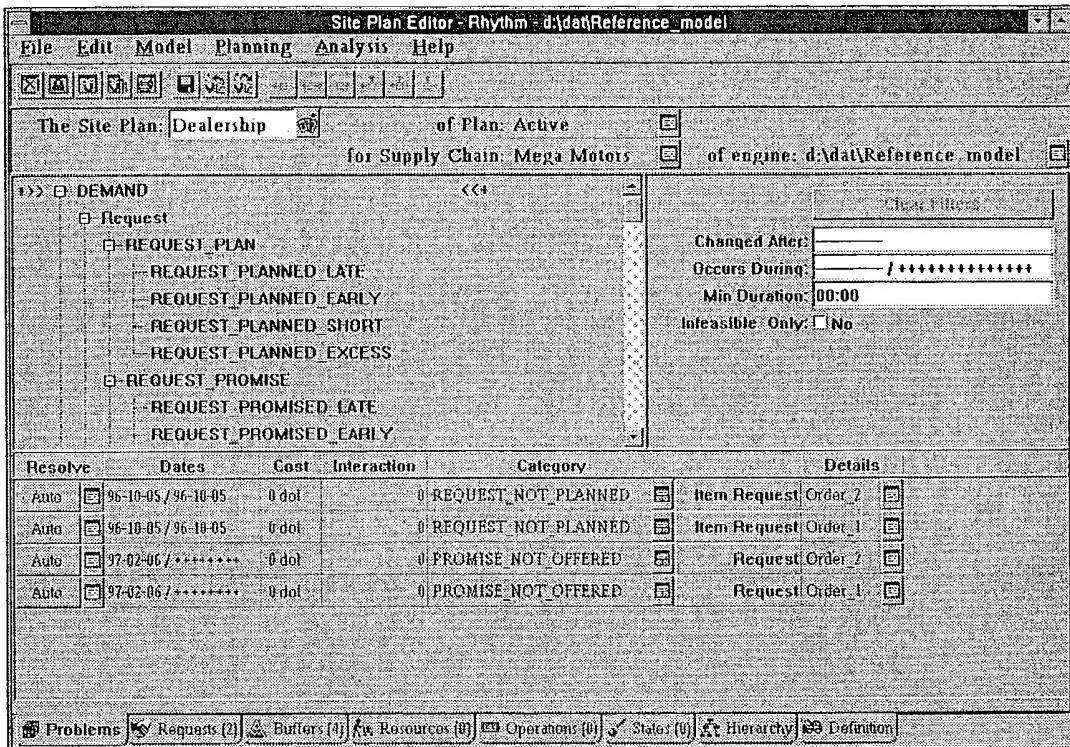
- site
- organization plan - site plan for super-site
- member plans - list of site plans for member sites

A site plan for a LINK site has (See FIGURE 130):

- an operation plan for each operation in that site
- an operation state for mapping the state of an operation plan
- a resource plan for each resource in that site
- a buffer plan for each buffer in that site
- a request for each request from other sites for items supplied by this site
- a promise for each promise made by this site to supply items to other sites

FIGURE 130

Site Plan



A site plan for a supplier has a:

- request for each request from LINK sites for items supplied by this supplier
- promise for each promise made by this supplier to supply items to link sites

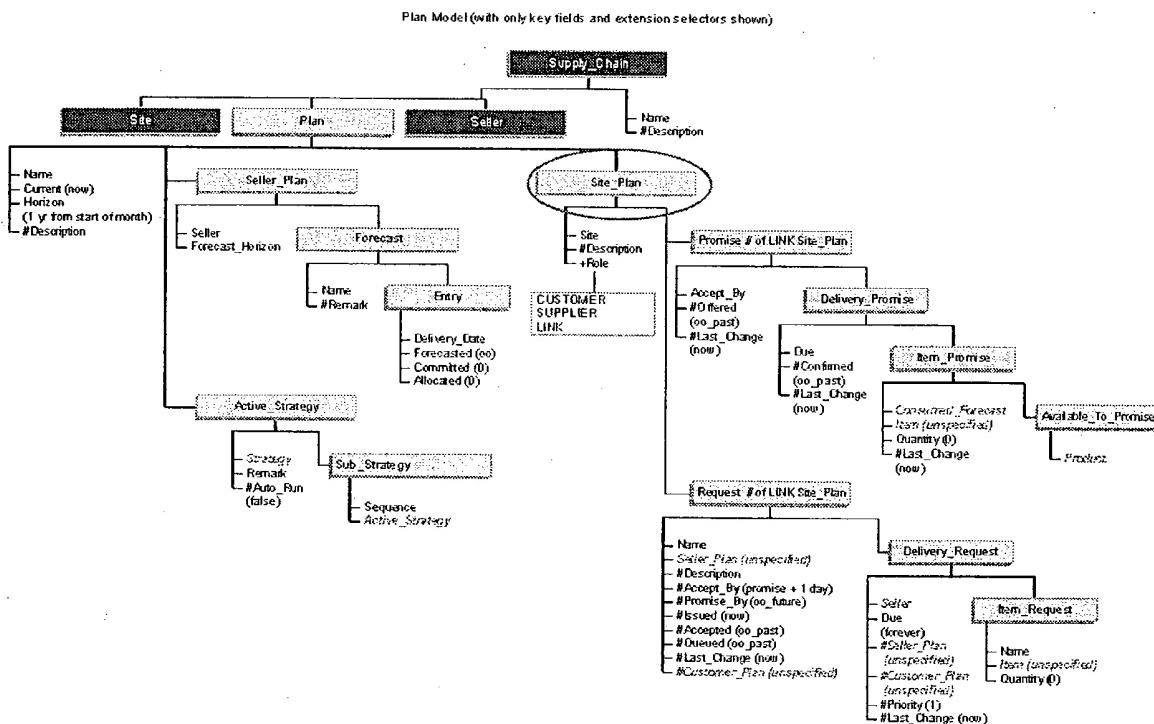
A customer site is not planned, so no additional fields are displayed.

### 3.44.2 Model Structure

FIGURE 131 shows the relationship of the model to its parent model and submodels.

**FIGURE 131**

Model Structure



### 3.44.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Site Plan* report.

Parent Model: Plan

Submodels: Buffer\_Plan, Resource\_Plan, Operation\_Plan, Operation\_State, Request, Promise

#### 3.44.4 Displaying a Site Plan

To display the *Site Plan Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Site</i> from the list of <i>Domains</i> .                                  |
| 4    | Select <i>Site Plan Editor</i> from the list of <i>Reports/Activities for Sites</i> . |
| 5    | Click <i>Display Report</i> . The <i>Site Plan Editor</i> displays.                   |
| 6    | (To add a new site plan, select the <i>Model / New</i> menu item.)                    |

#### 3.44.5 Interactive Planning of Requests

The *Planning* menu contains the following items to allow interactive planning of requests. The request list in the *Site Plan* editor allows the planning of individual requests. The delivery request list in the *Request* editor allows the planning of individual delivery requests:

- *Satisfy All Unanswered Requests*
- *Satisfy All Queued Requests*
- *Satisfy All Requests* - does the planning, based on what the supply chain said it could do. Commitments, but no allocations yet.
- *Satisfy All Promises*
- *Promise As Planned* - send promises back out that match the plan. There should then be some allocations.
- *Accept As Allocated*

### 3.44.6 Saving and Restoring Plan

To generate a plan:

| Step | Action  |
|------|---|
| 1    | Display the <i>Site Plan Editor</i> .   |
| 2    | Select the <i>Requests</i> tab to display a list of demands to be planned.  |
| 3    | Select the <i>Planning / Satisfy All Requests</i> menu item in the <i>Site Plan Editor</i> . The demand orders are now planned. |

To save a plan:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the <i>File / Save As</i> menu item. The <i>Save As</i> dialog is displayed.   |
| 3    | Select the directory name in which the plan is to be saved (e.g. <i>saved_plans</i> ), then select <i>OK</i> (or double click the directory name). The files in the directory are listed. |
| 4    | Type a plan name (e.g. <i>testsave</i> ) in the <i>Save as</i> box, then select <i>OK</i> . The plan is saved in this file.   |

To restore a plan:

| Step | Action   |
|------|--|
| 1    | Change the directory to the directory that contains the executables.   |
| 2    | Type the following command:<br><code>scp_engine -open /saved_plans/testsave -port xxxx &amp;</code><br>The plan is restored from the file. |

### 3.45 Skill

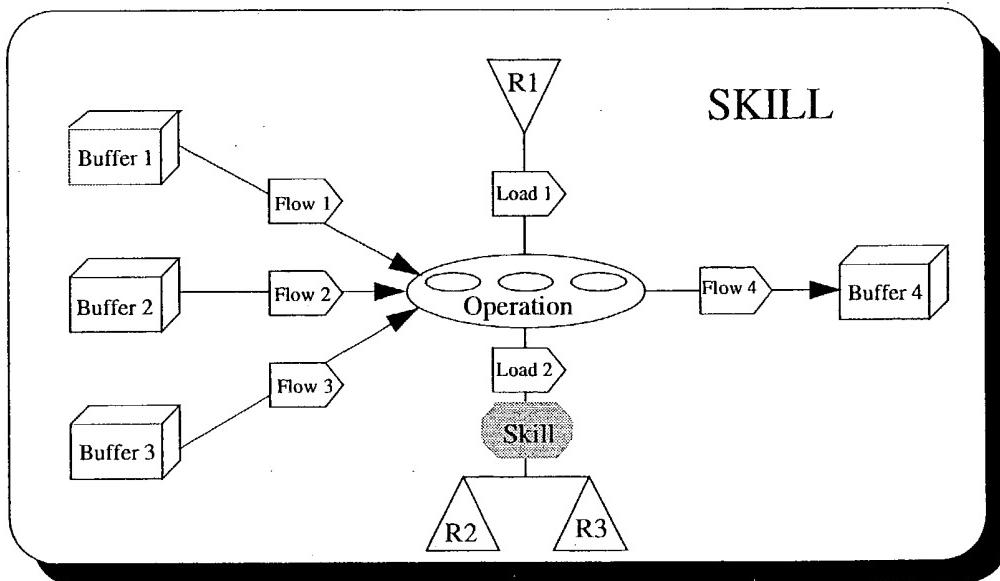
#### 3.45.1 Description

A **Skill** models a basic capability needed to perform an operation. Different resources may be capable of the same skill, but possibly at different efficiencies. An operation can specify a skill, and any resource capable of that skill can be used. See FIGURE 132.

Resource changes (alternate resources) within skill groups should be allowed freely, whereas operation changes (alternate operations) should be selected manually. Skill has an extension called *selection* which implements the rules for an alternate resource selection.

FIGURE 132

FLO Network Model - Skill



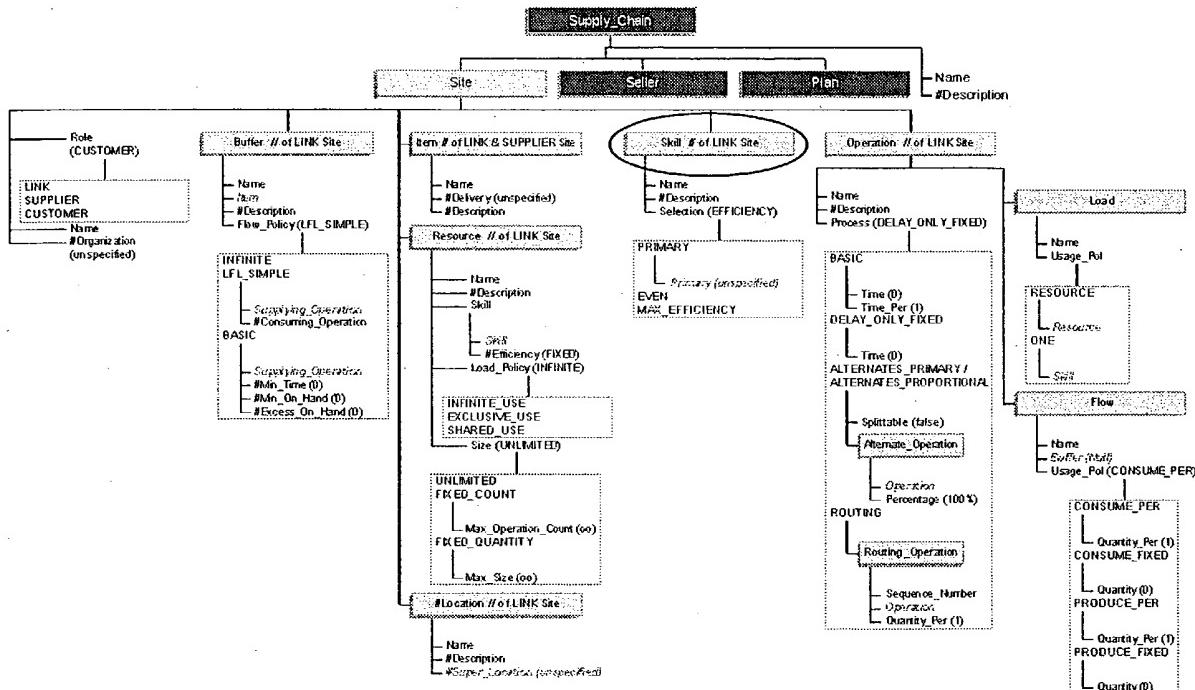
### 3.45.2 Model Structure

FIGURE 133 shows the relationship of the model to its parent model and submodels.

**FIGURE 133**

Model Structure

Site Model (with only key fields and extension selectors shown)



### 3.45.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the Skill report.

Parent Model: Site

Submodels: Skill\_Resource

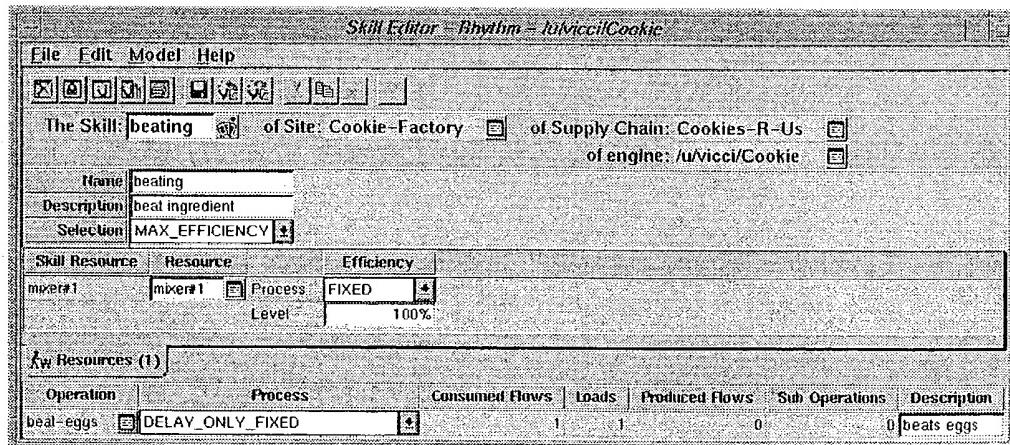
### 3.45.4 Displaying a Skill

To display the *Skill Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> .       |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.                                 |
| 6    | Select the <i>Sites</i> tab.   |
| 7    | Select the button next to a site name. The <i>Site Editor</i> is displayed.                            |
| 8    | Select the <i>Resources</i> tab.   |
| 9    | Select the button next to a resource name. The <i>Resource Editor</i> is displayed.                    |
| 10   | Select the <i>Skills</i> tab.  |
| 11   | Select the button next to a resource skill name. The <i>Skill Editor</i> is displayed. See FIGURE 134. |
| 12   | (To add a new skill, select the <i>Model/New</i> menu item.)   |

FIGURE 134

Skill



### 3.45.5 Changing Usage Policy

To change the usage policy:

| Step | Action  |
|------|---|
| 1    | Edit any load (display a <i>Load</i> report).                                       |
| 2    | If the load has an unspecified skill, edit it to any of the available skills.       |
| 3    | If the load has an unspecified resource, edit it to any of the available resources. |

### 3.45.6 Modeling Cycles

To model cycles, define each cycle as a skill, attach these skills to the appropriate Resource via a Resource\_Skill model, and use calendars to model mutually exclusive periods (blocks), partially overlapping periods (cycles), or totally overlapping periods (for long term planning when cycles are not to be modeled).

Using the skill model to model cycles, this representation assumes that cycles are specified externally. The engine ensures compatibility between operation and resource.

An operation should be loaded on a resource which is not running the cycle at the time at which it is scheduled. The operation plan will never be scheduled during the 0% efficiency periods. It automatically slides before or after the downtime.

The basic level of modeling of cycles is as follows:

- An operation that can run only during a certain cycle is modeled as loading a skill with that name (for convenience).
- Cycled resources are modeled as possessing at least as many skills as cycles they run. Each of these skills has a pre-defined efficiency calendar which is set to 100% when the cycle is operational and 0% otherwise.
- If an operation could run under different cycles on the same resource, either of the following approaches could be used:
  - alternate operations, each requiring a different skill.
  - a composite skill on each resource which possesses any of the allowed cycles with a skill efficiency calendar which is the union of the individual skill calendars.
- If an operation could run under some cycles on a particular resource and a different set of cycles on another resource, the same effect could be achieved by a suitable combination of the alternatives mentioned in the previous bullet.
- When planning in the longer term, skill calendars could be allowed to overlap (i.e. have a non-zero efficiency for more than one skill at the same time), the extent of overlap increasing further into the future. In the same way, skill efficiency calendars can be made more mutually exclusive and collectively exhaustive to model precisely scheduled cycles.

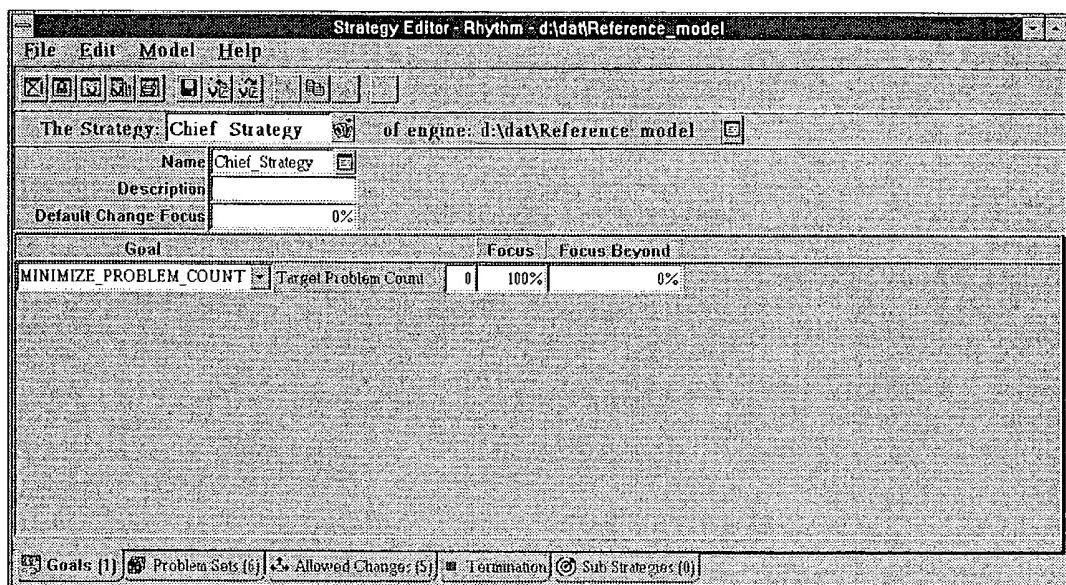
## 3.46 Strategy

### 3.46.1 Description

The *Strategy Editor* models an approach to resolving problems in a plan. It specifies what problems to attempt to resolve, what modifications to make, and what criteria to use for determining the goodness of the plan. See FIGURE 135. The problem sets define the set of problems to be addressed by this strategy. The problems are specified by category and tolerances within a certain horizon.

FIGURE 135

Strategy

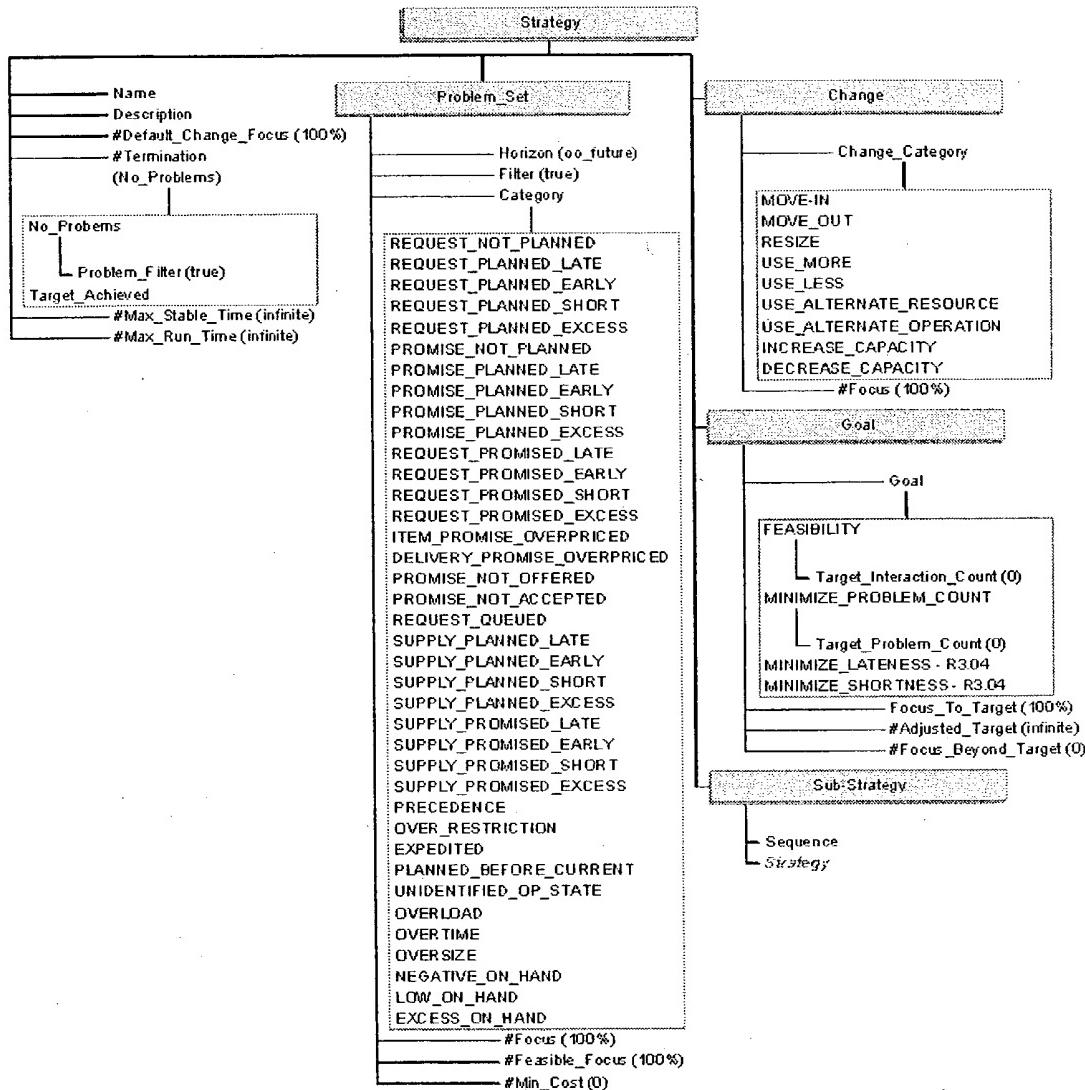


### 3.46.2 Model Structure

FIGURE 136 shows the relationship of the model to its parent model and submodels.

FIGURE 136

Model Structure.



### 3.46.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Strategy* report.

Parent Model: Plan

Submodels: Sub\_Strategy, Problem\_Set, Strategy\_Change, Strategy\_Goal

### 3.46.4 Viewing Problem Sets

To view problem sets:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> from the list of <i>Domains</i> .   |
| 4    | Select <i>Plan Editor</i> from the list of <i>Reports/Activities for Plans</i> .                   |
| 5    | Click <i>Display Report</i> . The <i>Plan Editor</i> displays.                                     |
| 6    | Select the <i>Active Strategies</i> tab.   |
| 7    | Select the button next to an active strategy name. The <i>Active Strategy Editor</i> is displayed. |
| 8    | Select the button next to a strategy name. The <i>Strategy Editor</i> is displayed.                |
| 9    | Select the <i>Problems</i> tab.  |
| 10   | (To add a new strategy, select the <i>Model/New</i> menu item.)                                    |

### **3.47 Subcalendar**

---

#### **3.47.1 Description**

Subcalendars are separate calendars that have modeling information used by a top level calendar. Information that is used by several top level calendars can be specified in a subcalendar, avoiding the duplicate effort of entering this information a number of times.

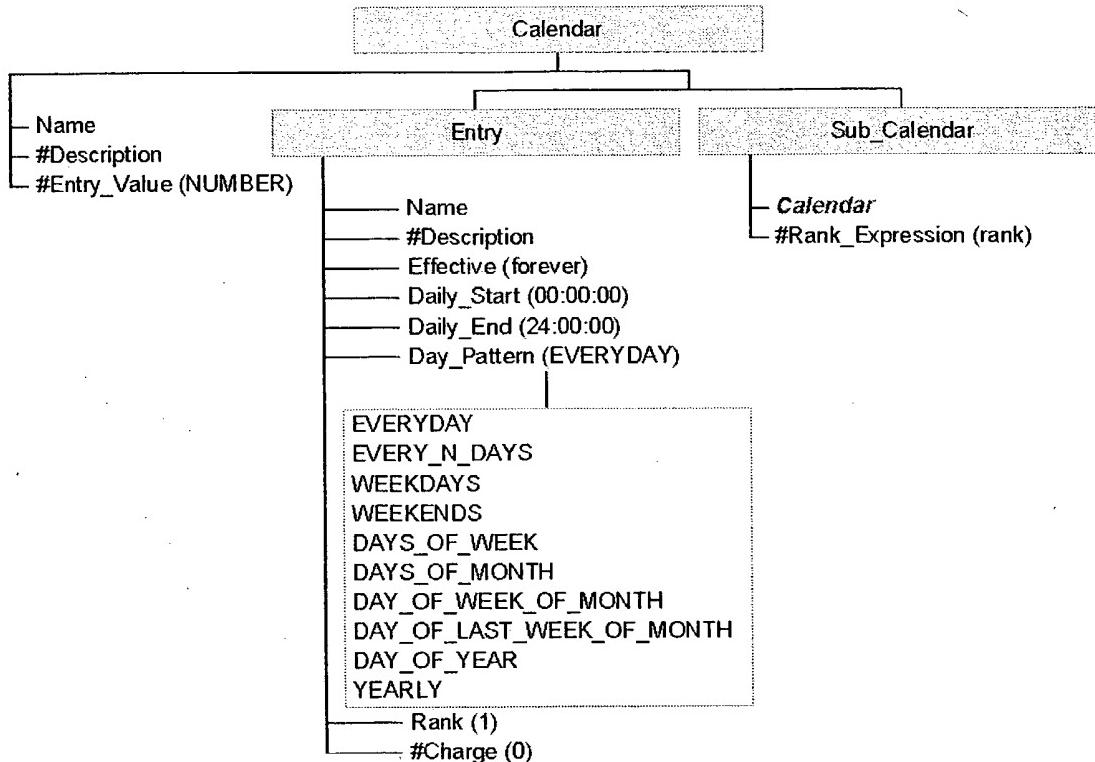
Having *subcalendars* helps a user to more quickly and easily perform the task of defining a calendar. This is because a *subcalendar* can be used by more than one top-level calendar, so it saves time and effort. Using a holiday *subcalendar* is a good example. Shift calendars may be defined, but on holidays the basic information in the model doesn't apply. A user can create one holiday *subcalendar* and use it with the shift calendar and other top level calendars. The holiday *subcalendar* entries can be ranked higher than the shift calendars entries, so that in the situation when they overlap, the holiday *subcalendar* takes priority. This saves the duplicate effort of defining holidays for every shift calendar.

### 3.47.2 Model Structure

FIGURE 137 shows the relationship of the model to its parent model and submodels.

**FIGURE 137**

Model Structure



### 3.47.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Subcalendar* report.

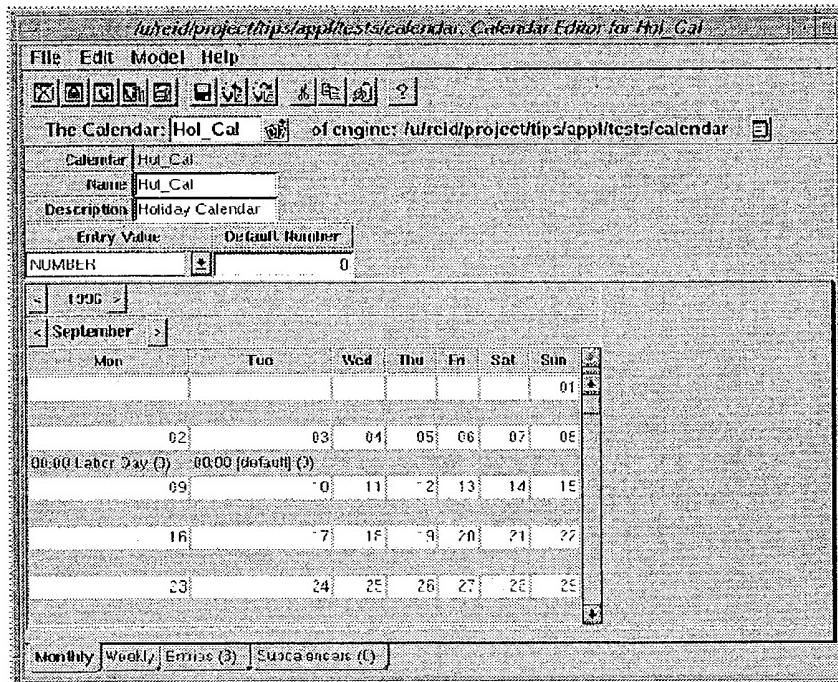
Parent Model: Calendar

### 3.47.4 Calendar Editor for Subcalendar

To view a subcalendar, on the *Calendar Editor* select the *Subcalendar* tab, and then select the button next to the subcalendar name. FIGURE 138 shows the Holidays subcalendar used by the Shifts calendar.

**FIGURE 138**

Subcalendar - Holidays



All days in this month have a default value except for day 02, which lists the Labor Day holiday.

Subcalendars have the same layouts as calendars. FIGURE 139 and FIGURE 140 show the *Weekly* layout and *Entries* layout for the Holiday subcalendar.

FIGURE 139

Subcalendar - Weekly Layout

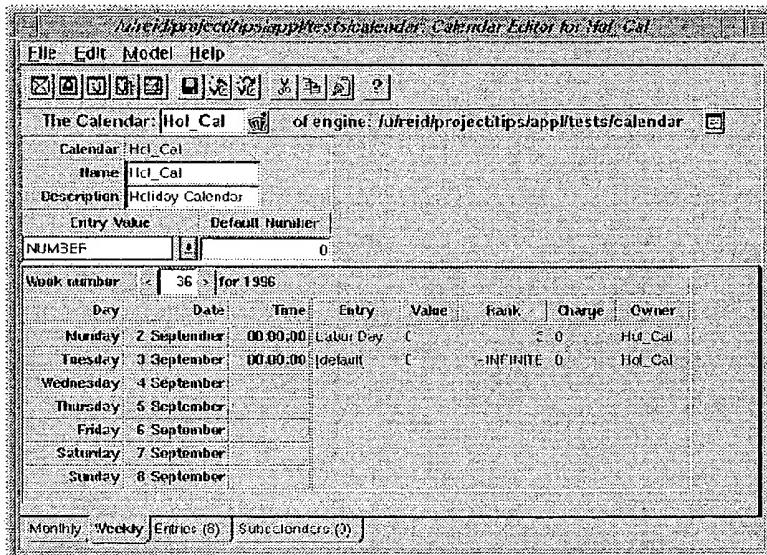
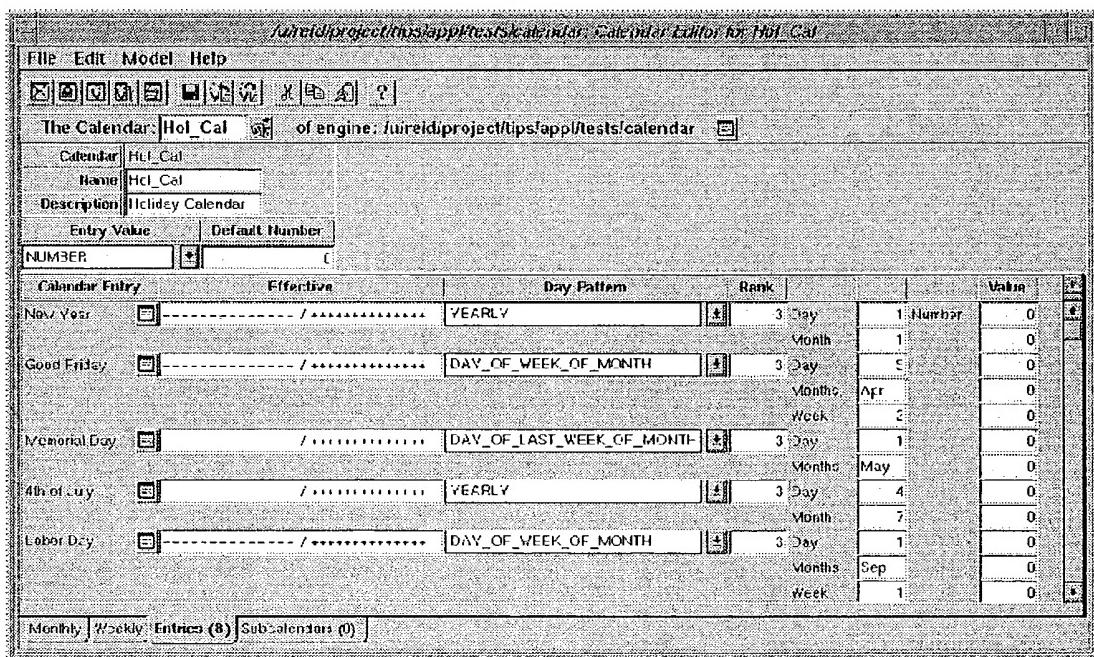


FIGURE 140

Subcalendar - Entries Layout



Refer to the Calendars section in this manual for more information about using the *Calendar Editor*.

### 3.47.5 Displaying a Subcalendar

To display the *Subcalendar*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Calendar</i> from the list of <i>Domains</i> .  |
| 4    | Select <i>Calendar Editor</i> from the list of <i>Reports/Activities for Calendars</i> .            |
| 5    | Click <i>Display Report</i> . The <i>Calendar Editor</i> displays.                                  |
| 6    | Select the <i>Subcalendars</i> tab. A list of subcalendars is displayed.                            |
| 7    | Select the button next to the desired subcalendar name. The <i>Subcalendar Editor</i> is displayed. |

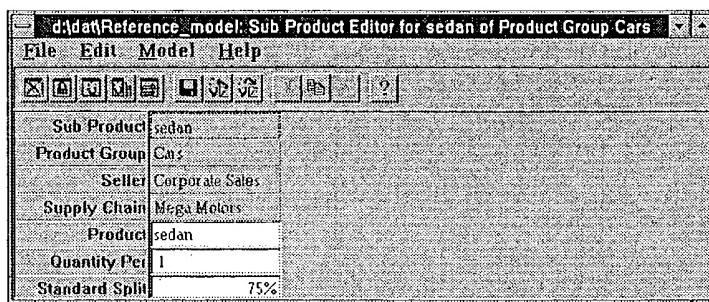
### 3.48 Sub Product

#### 3.48.1 Description

The *Sub Product* (of Product Group) shows the products that are direct members of a product group. This does not include the products in the product group's sub\_products. See FIGURE 141.

FIGURE 141

Sub Product

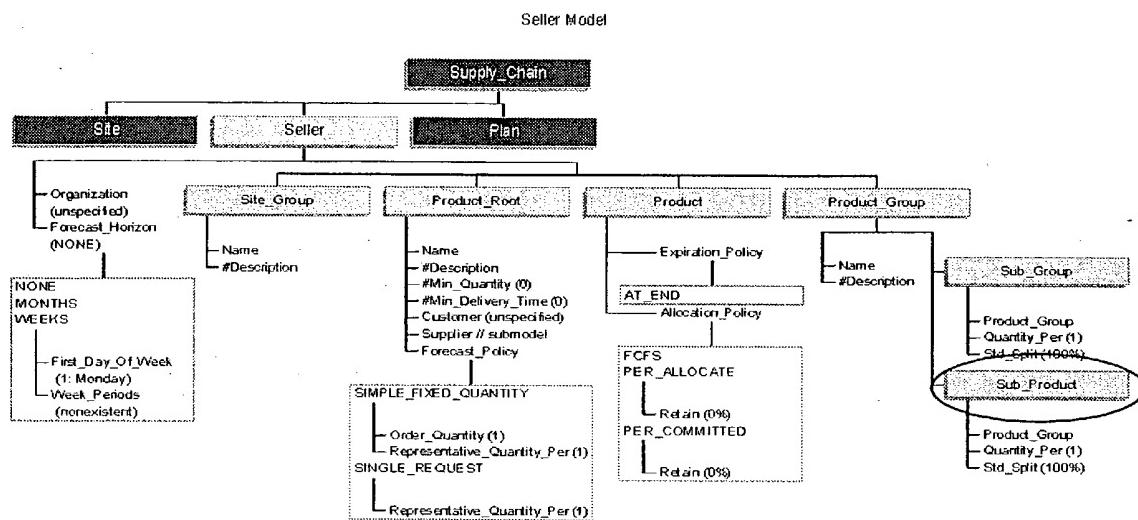


### 3.48.2 Model Structure

FIGURE 142 shows the relationship of the model to its parent model and submodels.

**FIGURE 142**

Model Structure



### 3.48.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Sub Product* report.

Parent Model: Product\_Group

### 3.48.4 Displaying a Sub Product

To display the *Sub Product Editor*:

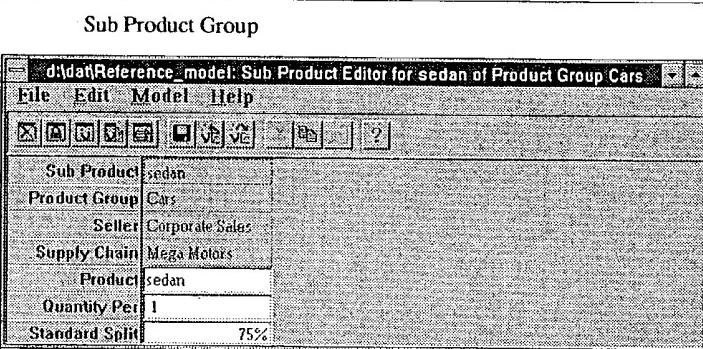
| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Products</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .        |
| 4    | Select <i>Forecast Editor</i> from the list of <i>Reports/Activities for Products</i> .     |
| 5    | Click <i>Display Report</i> . The <i>Forecast Editor</i> displays.                          |
| 6    | Select the <i>Definition</i> tab.   |
| 7    | Select the button next to a product root name. The <i>Product Root Editor</i> is displayed. |
| 8    | Select the <i>Sub Products</i> tab.   |
| 9    | Select the button next to a sub-product name. The <i>Sub Product Editor</i> is displayed.   |
| 10   | (To add a new sub-product, select the <i>Model/New</i> menu item.)                          |

## 3.49 Sub Product Group

### 3.49.1 Description

The *Sub Product Group* shows the product groups that are direct members of a product group. Note that no product group descendant can contain this product group or contain common products. See FIGURE 143.

FIGURE 143



### 3.49.2 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Sub Product Group* report.

Parent Model: Product\_Group

### 3.49.3 Displaying a Sub Product Group

To display the *Sub Product Group Editor*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Products</i> (in the <i>Demand</i> tree) from the list of <i>Domains</i> .                  |
| 4    | Select <i>Forecast Editor</i> from the list of <i>Reports/Activities for Products</i> .               |
| 5    | Click <i>Display Report</i> . The <i>Forecast Editor</i> displays.                                    |
| 6    | Select the <i>Definition</i> tab.   |
| 7    | Select the button next to a product group name. The <i>Product Group Editor</i> is displayed.         |
| 8    | Select the <i>Sub Groups</i> tab.   |
| 9    | Select the button next to a sub-product group name. The <i>Sub Product Group</i> report is displayed. |
| 10   | (To add a new sub-product group, select the <i>Model / New</i> menu item.)                            |

## 3.50 Supply Chain

### 3.50.1 Description

The supply chain models a set of sites (organizational units) that make up a supply chain to be managed and planned. The sites that make up a supply chain can be modeled in detail, or may be modeled as a black box that request items or promise to supply items.

The *Supply Chain Editor* provides layouts (tabs) for listing the following information (See FIGURE 144):

- *Sites* - lists all customers of the supply chain.
- *Sellers* - lists sellers.
- *Field Errors* - lists inconsistencies in the data read into Rhythm. Not all of these errors are fatal.
- *Calendars* - lists the unit capacity calendars for relevant resources.

FIGURE 144

Supply Chain

The screenshot shows the 'Supply Chain Editor' application window titled 'Supply Chain Editor - Rhythm - d:\dat\Reference\_model'. The window has a menu bar with File, Edit, Model, and Help. Below the menu is a toolbar with various icons. The main area is divided into sections: 'The Supply Chain' (containing 'Mega Motors' and 'of engine: d:\dat\Reference\_model'), 'Name' (Mega Motors), 'Description' (Mega Motors Supply Chain), and a 'Sites' table.

| Site          | Role     | Managed                                 | Category | Delivery City | Delivery State | Delivery Country |
|---------------|----------|---|----------|---------------|----------------|------------------|
| Engine Supply | LINK     | <input checked="" type="checkbox"/> Yes |          |               |                |                  |
| Supplier      | SUPPLIER |   |          |               |                |                  |
| Customer      | CUSTOMER |   |          |               |                |                  |
| Dealership    | LINK     | <input type="checkbox"/> No             |          |               |                |                  |
| Mega NAO      | LINK     | <input checked="" type="checkbox"/> Yes |          |               |                |                  |

At the bottom, there are tabs for 'Sites [5]', 'Sellers [3]', 'Field Errors [2]', 'Calendars [3]', and 'Plans [1]'. The 'Sites' tab is selected.

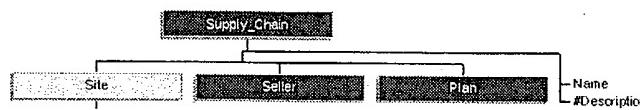
### 3.50.2 Model Structure

FIGURE 145 shows the relationship of the model to its parent model and submodels.

**FIGURE 145**

Model Structure

Site Model (with only key fields and extension selectors shown)



### 3.50.3 Model Relationships

The Rhythm models form a hierarchy. Every model except top level models such as Supply Chain contains a parent model. Each model may contain any number of specific submodels. The following models are related to the *Supply Chain* report.

Parent Model: An independent (top-level) model

Submodels: Site, Seller, Plan

### 3.50.4 Displaying a Supply Chain

To display the *Supply Chain Editor*:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Supply Chain</i> from the list of <i>Domains</i> .                                     |
| 4    | Select <i>Supply Chain Editor</i> from the list of <i>Reports/Activities for Supply Chains</i> . |
| 5    | Click <i>Display Report</i> . The <i>Supply Chain Editor</i> displays.                           |
| 6    | (To add a new supply chain, select the <i>Model/New</i> menu item.)                              |

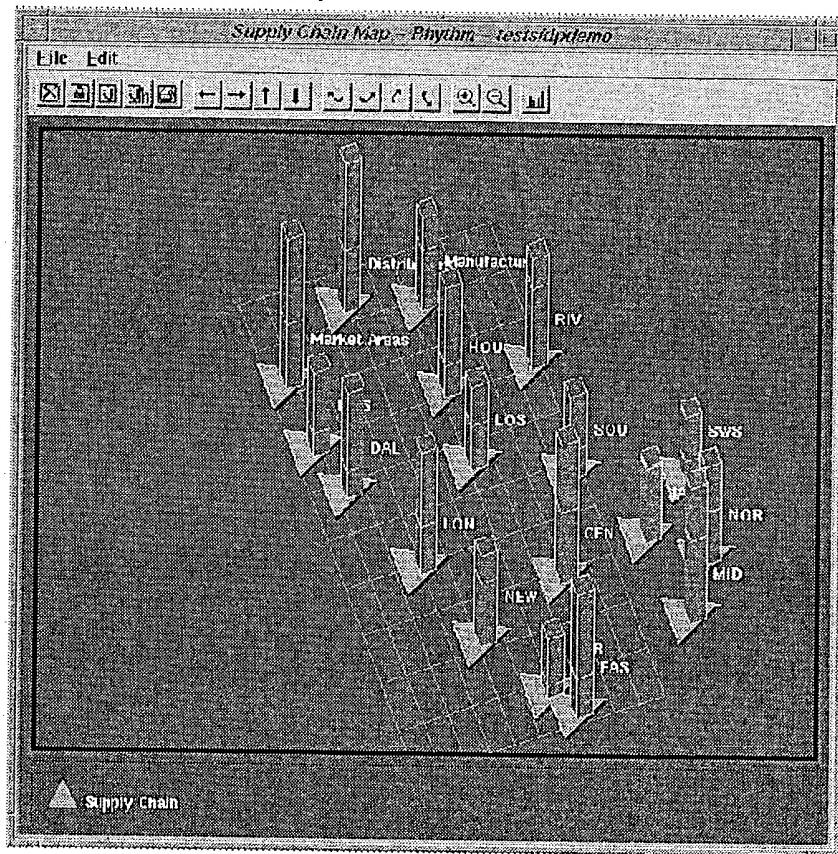
### 3.50.5 Displaying a Supply Chain Map

To display a *Supply Chain Map*:

| Step | Action  |
|------|---|
| 1    | Display the <i>Supply Chain Editor</i> .  |
| 2    | Select the button next to the <i>Supply Chain</i> name. The <i>Supply Chain Map</i> for this supply chain is displayed. See FIGURE 146. |
| 3    | Note the number of sites.   |
| 4    | Double click on the <i>Supply Chain Map</i> . The <i>Site BOM Map</i> is displayed.   |

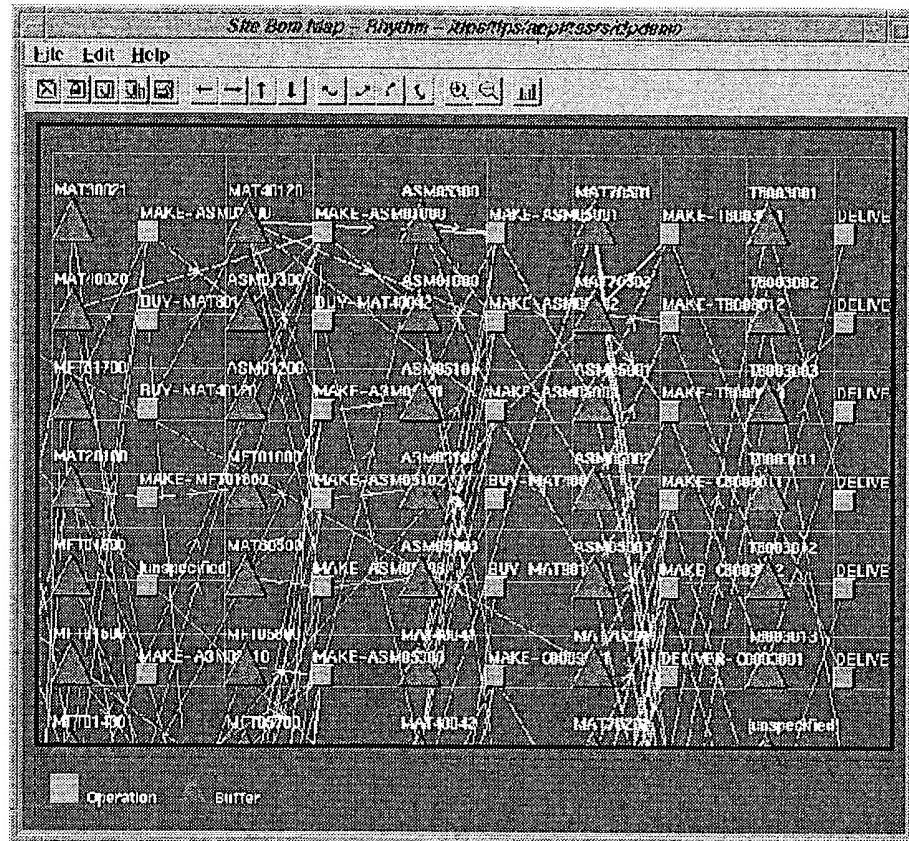
**FIGURE 146**

Supply Chain Map



**FIGURE 147**

Site BOM Map





**Section 4**

# Summary Reports

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## **4.1 Introduction**

---

This section describes the library of summary reports (windows) that is supplied with the *Rhythm* Supply Chain Planner (SCP) graphical user interface (GUI). This library was designed to ensure consistency and easy customization of elements throughout the entire set of reports. It provides users with a point of reference for planning and scheduling their manufacturing system by enabling the user to view summarized information. These reports function as a graphical interface to all the data that is present in the set of user data files. These data files are communicated to the summary reports through the set of models that are described in detail in the *Rhythm Supply Chain Planner (SCP) Model Reference*.

## **4.2 Purpose**

---

The purpose of the *Rhythm* SCP Summary Reports is to:

- provide users with summarized information for all plans, sellers, and forecasts
- facilitate easier use of *Rhythm* for planning and scheduling

### 4.3 Report

Table 19 lists all summary reports that are available in the *Rhythm* user interface.

*Report* is the title that displays at the top of a report or labels a tab of a report.

The *Parent Model Name* is the name of the model from which the report is derived.

The *Main Menu Button* is the title displayed on the button which, when pressed, displays the desired report.

**Table 19: Report Names**

| Report/Activity Name   | Report Title<br>(Parent Report) | Tab Name of Parent Report | Tab Names of Summary Reports   |
|------------------------|---------------------------------|---------------------------|--|
| Allocation Summaries   | Allocation Summaries            |                           |  |
| Demand Summary         | Demand Summaries                |                           |  |
| Fill Rate Summary      | Plan Summaries                  | Product Summary           |  |
| Financial Performance  | Financial Performance           |                           | Revenue-Cost Cumulative  |
| Forecast Management    | Forecast Management             |                           | Seller Tree Product Tree   |
| Master Production Plan | Master Production Plan          |                           | Item Summaries Item Details  |
| Master Purchase Plan   | Plan Editor                     | Active Strategies         |  |
| Master Sales Plan      | Master Sales Plan               |                           | Products of a Seller Groups of a Seller Products of a Group Groups of a Product Generics of a Product Sellers of a Product |
| On-Hand Summary        | Plan Summaries                  | Inventory Buffer Summary  |  |
| Plan Summaries         | Plan Summaries                  |                           | Resource Summary Inventory Buffer Summary Product Summary Capacity Buffer Summary  |
| Problem Summary        | Plan Summaries                  | Product Summary           |  |

**Table 19: Report Names**

| Report/Activity Name | Report Title<br>(Parent Report) | Tab Name of Parent<br>Report | Tab Names of Summary<br>Reports   |
|----------------------|---------------------------------|------------------------------|---|
| Resource Utilization | Resource Utilization            |                              | Resource by Site<br>Resource by Skill<br>Resource by Category<br>Resource by Location |
| Utilization Summary  | Plan Summaries                  | Resource Summary             |   |

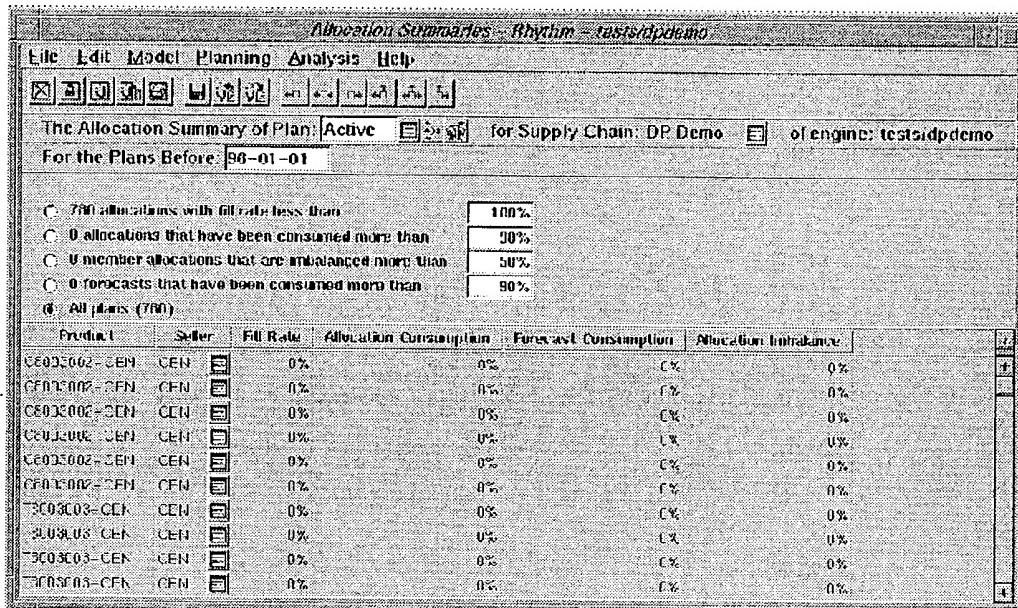
## 4.4 Allocation Summaries

### 4.4.1 Description

The *Allocation Summaries* report provides a summary of forecasted allocations for each product or product group and each seller included in the plan. This section describes the *Allocation Summaries* report. See FIGURE 148.

FIGURE 148

Allocation Summaries



### 4.4.2 Model Relationships

The following models are related to the *Allocation Summaries* report.

Parent Model: Seller\_Plan

Submodels: Forecast

#### 4.4.3 Viewing Allocation

To display the *Allocation Summaries* report:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Demand</i> (in <i>Plan</i> tree) or <i>Products</i> or <i>Sellers</i> (in <i>Demand</i> tree) under the list of <i>Domains</i> . |
| 4    | Select <i>Allocation Summary</i> from the list of <i>Reports/Activities for Demand</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Allocation Summary</i> report displays.   |
| 6    | (To view the allocation summary for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)          |

#### 4.4.4 Allocation Summaries Report Components

The *Allocation Summaries* report is divided into two sections of information. The top section contains allocation percentage information. Each choice is used to filter the amount of information shown in the bottom section. By selecting a line in this section, the user can display the list of products totalled by that line. A list of each choice and its description is provided below:

| Choice   | Description   |
|--|---|
| allocations with fill rate less than $x\%$             | The number of allocations for a product of a seller that has at least one time bucket for which the total volume of actuals (allocated) is $x\%$ less than the committed amount.                |
| allocations that have been consumed more than $x\%$    | The number of allocations for a product of a seller that has at least one time bucket for which the total volume of actuals (allocated) is consumed more than $x\%$ .                           |
| member allocations that are imbalanced more than $x\%$ | The number of allocations which are above (positive) or below (negative) the forecasted amounts more than $x\%$ of the specified time bucket.   |
| forecasts that have been consumed more than $x\%$      | The number of forecasts for a product of a seller that has at least one time bucket in which the total volume of actuals (forecasted) is consumed more than $x\%$ of the specified time bucket. |
| All Plans  | Shows allocations for all plans before the date in the <i>For the Plans Before</i> field.   |

The bottom section of the *Allocation Summaries* report contains information about allocations, such as the product, and its seller. The information in the bottom section of the report is as follows:

| Column Name            | Description   |
|------------------------|---|
| Product                | The type of product being allocated.  |
| Seller                 | The name of the seller. Select the button next to the seller name to display the <i>Forecast Editor</i> for the forecast of the selected product.   |
| Fill Rate              | The ratio of the amount of product the plan has reserved for the requestor (allocated) versus the amount of product the requestor has told the planner he expects to sell (committed).    |
| Allocation Consumption | The ratio between consumed and allocated amounts of a product or product group. This value represents the percentage of products with allocation consumption greater than x%.             |
| Allocation Imbalance   | The percentage of allocations which are above (positive) or below (negative) the forecasted amounts.  |
| Forecast Consumption   | The rate at which our expected (or forecasted) quantities of goods are actually consumed. This explains whether actual consumption is greater than or less than the consumption expected. |

The values associated with these items are dependent on the forecasts and the percentages set in the top section of the *Allocation Summaries* report. Selecting the *Report* button next to any of the sellers displays the *Forecast Editor* report.

The information in this report (as a whole) can be modified using the *Planning* menu to perform one of the following:

- *Satisfy All Unanswered Requests*
- *Satisfy All Queued Requests*
- *Satisfy All Requests* - does the planning, based on what the supply chain said it could do. Commitments, but no allocations yet.
- *Satisfy All Promises*
- *Promise as Planned* - send promises back out that match the plan. There should then be some allocations.

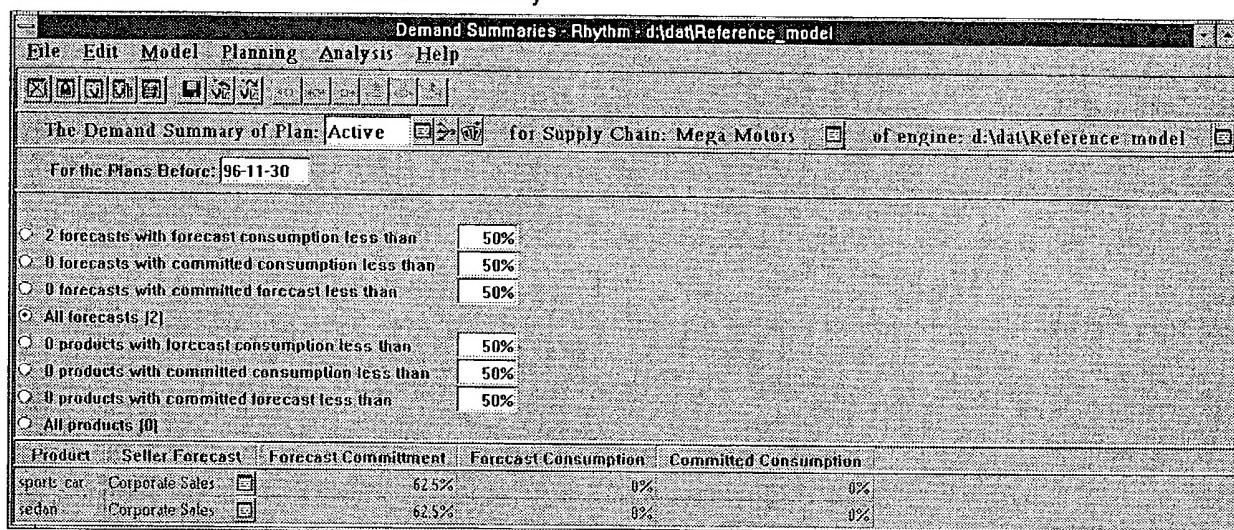
## 4.5 Demand Summary

### 4.5.1 Description

The *Demand Summary* report provides a display of all demand between sites of the specified plan. Demand is divided into forecasts and products. See FIGURE 149.

FIGURE 149

Demand Summary



### 4.5.2 Model Relationships

The following models are related to the *Demand Summary* report.

Parent Model: Seller\_Plan

Submodels: Forecast

#### 4.5.3 Viewing Demand

To display the *Demand Summary* report:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Demand</i> (in <i>Plan tree</i> ) from the list of <i>Domains</i> .   |
| 4    | Select <i>Demand Summary</i> from the list of <i>Reports/Activities for Demand</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Demand Summary</i> report displays.  |
| 6    | (To view the demand summary for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |

#### 4.5.4 Demand Summary Report Components

The *Demand Summary* report is divided into two sections of information. The top section contains a summary of demand issues for both forecasts and products or product groups. By selecting a line in this section, the user can display the list of forecasts or products totalled by that line. The information in this section determines the display of information in the bottom section. Each choice and its description is provided below:

| Choice  | Description  |
|---|--|
| forecasts with forecast consumption less than x%  | The number of Forecasts for a Product of a Seller that has at least one time bucket for which the total volume of actuals (consumed) is less than x% of the forecasted amount.               |
| forecasts with committed consumption less than x% | The number of Forecasts for a Product of a Seller that has at least one time bucket for which the total volume of actuals (consumed) is less than x% of the committed amount.                |
| forecasts with committed forecast less than x%    | The number of Forecasts for a Product of a Seller that has at least one time bucket for which the total volume of actuals (committed) is less than x% of the forecasted amount.              |
| All forecasts                                     | Allows the user to list all forecasts.   |
| products with forecast consumption less than x%   | The number of Products for the Product (as a whole) of a Seller that has at least one time bucket for which the total volume of actuals (consumed) is less than x% of the forecasted amount. |
| products with committed consumption less than x%  | The number of Products for the Product (as a whole) of a Seller that has at least one time bucket for which the total volume of actuals (consumed) is less than x% of the committed amount.  |

| Choice  | Description  |
|---|--|
| products with committed forecasts less than $x\%$ | The number of Products for the Product (as a whole) of a Seller that has at least one time bucket for which the total volume of actuals (committed) is less than $x\%$ of the forecasted amount. |
| All Products                                      | Allows the user to list all products.  |

The bottom section of the *Demand Summary* report contains a list of the forecasts or products identified by the selected line, including the product in demand and forecasted commitment, forecasted consumption, and committed consumption. The information in the bottom section is as follows:

| Column Name           | Description  |
|-----------------------|--|
| Product               | The item number for the product.   |
| Seller Forecast       | The name of the seller whose forecast information is being displayed. Select the button next to the seller to display the <i>Forecast Editor</i> for that seller.                          |
| Forecast Commitment   | The ratio between committed and forecasted amounts of a product or product group. This value represents the percentage of forecasts or products with committed forecast less than $x\%$ .  |
| Forecast Consumption  | The ratio between consumed and forecast amounts of a product or product group. This value represents the percentage of forecasts or products with forecast consumption less than $x\%$ .   |
| Committed Consumption | The ratio between consumed and committed amounts of a product or product group. This value represents the percentage of forecasts or products with committed consumption less than $x\%$ . |

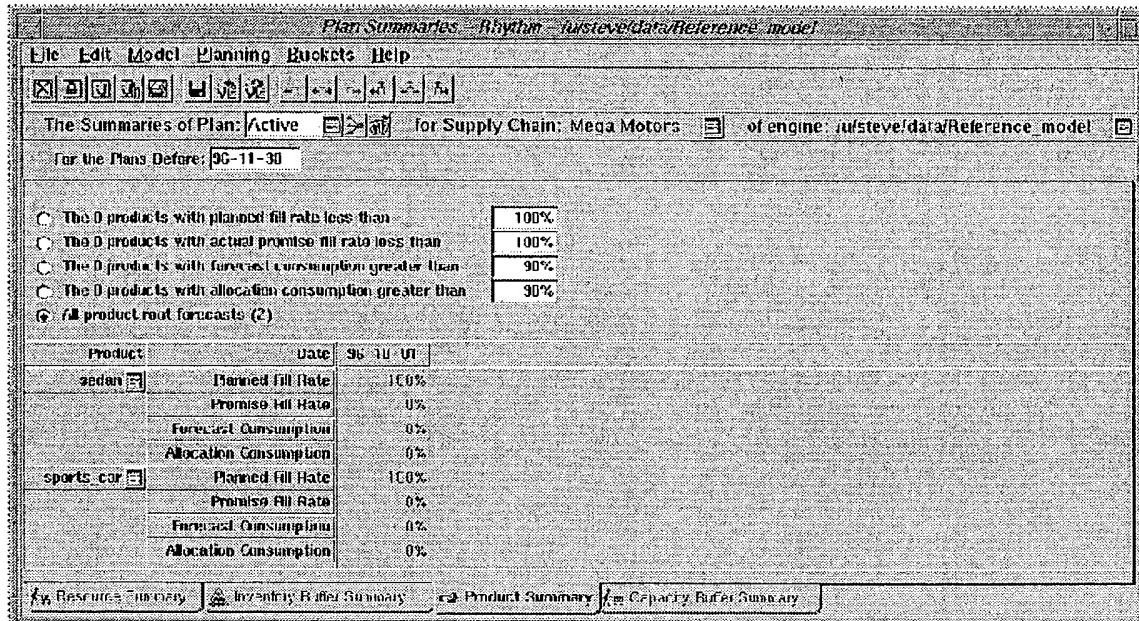
## 4.6 Fill Rate Summary

### 4.6.1 Description

*Fill Rate Summary* is an activity for a plan (rather than a standalone report) and displays as the *Product Summary* tab of the *Plan Summaries* report. The *Product Summary* tab displays summarized information for all products of the particular plan.

FIGURE 150

Fill Rate Summary



The information is displayed in columns and provides the product, dates, fill rates, and consumption. The information displayed in the bottom section of this report can be modified (using the items in the top section) to show the following:

| <b>Choice</b>   | <b>Description</b>  |
|---|---|
| products with planned fill rate less than $x\%$         | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (planned) is less than $x\%$ of the committed amount.     |
| products with actual promise fill rate less than $x\%$  | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (planned) is less than $x\%$ of the consumed amount.      |
| products with forecast consumption greater than $x\%$   | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (consumed) is greater than $x\%$ of the committed amount. |
| products with allocation consumption greater than $x\%$ | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (consumed) is greater than $x\%$ of the allocated amount. |
| All product root forecasts                              | All of the root product forecasts; no filtering.  |

#### 4.6.1.1 Product Summary Tab Components

The bottom section of the *Product Summary* tab provides information about the products that meet the criteria as set forth in the selected lines in the top section of this report. From the menu bar, the *Buckets* can also be changed to alter the display of information in this report. The *Forecast Editor* can be displayed by selecting the *Report* button next to each product. The information in the *Product Summary* tab is as follows:

| Column Name            | Description   |
|------------------------|---|
| Product                | The item number for the product.  |
| Date                   | The date or date range for which the information pertains to.   |
| Planned Fill Rate      | The ratio between planned and committed amounts of a product or product group. This value represents the percentage of products with a planned fill rate less than x%.        |
| Promise Fill Rate      | The ratio between planned and consumed amounts of the product pr product group. This value represents the percentage of products with a promise fill rate less than x%.       |
| Forecast Consumption   | The ratio between consumed and forecasted amounts of a product or product group. This value represents the percentage of products with forecast consumption greater than x%.  |
| Allocation Consumption | The ratio between consumed and allocated amounts of a product or product group. This value represents the percentage of products with allocation consumption greater than x%. |

#### 4.6.2 Viewing Fill Rate Summary

To display the Fill Rate Summary, use the following steps:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Demand</i> (in <i>Plan</i> tree) or <i>Products</i> (in <i>Demand</i> tree) from the list of <i>Domains</i> .          |
| 4    | Select <i>Fill Rate Summary</i> from the list of <i>Reports/Activities for Demand</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Product Summary</i> tab of the <i>Plan Summaries</i> report displays.                       |
| 6    | (To view the fill rate summary for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |

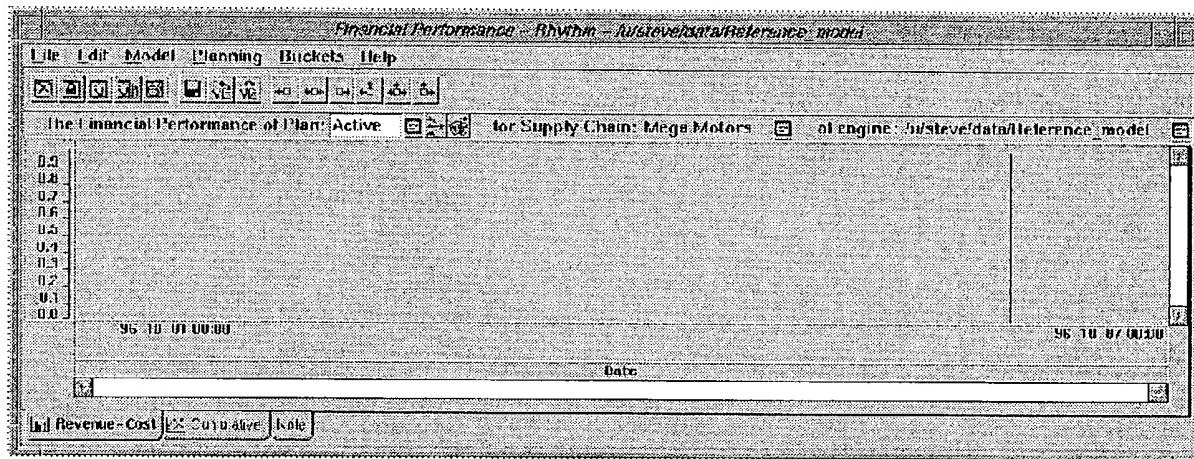
## 4.7 Financial Performance

### 4.7.1 Description

The *Financial Performance* report provides a display of the financial performance for a plan. This section describes the *Financial Performance* report. See FIGURE 151.

**FIGURE 151**

**Financial Performance**



### 4.7.2 Model Relationships

The following models are related to the *Financial Performance* report.

Parent Model:

Submodels:

#### 4.7.3 Viewing Financial Performance

To display the *Financial Performance* report:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> , <i>Site</i> (in <i>Plan tree</i> ), <i>Distribution</i> (in <i>Site tree</i> ), <i>Manufacturing</i> (in <i>Site tree</i> ) from the list of <i>Domains</i> . |
| 4    | Select <i>Financial Performance</i> from the list of <i>Reports/Activities for Plans</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Financial Performance</i> report displays.  |
| 6    | (To view financial performance for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)   |

#### 4.7.4 Financial Performance Report Components

The *Financial Performance* report has two tabs which display graphs depicting financial performance of a plan in two ways. The report shows the financial performance of a plan relating to Revenue and Cost in a bar graph layout. These figures are calculated by \_\_\_\_\_. It shows financial performance of a plan relating to cumulative figures in a line graph layout. These figures are calculated by \_\_\_\_\_.

##### 4.7.4.1 Revenue-Cost

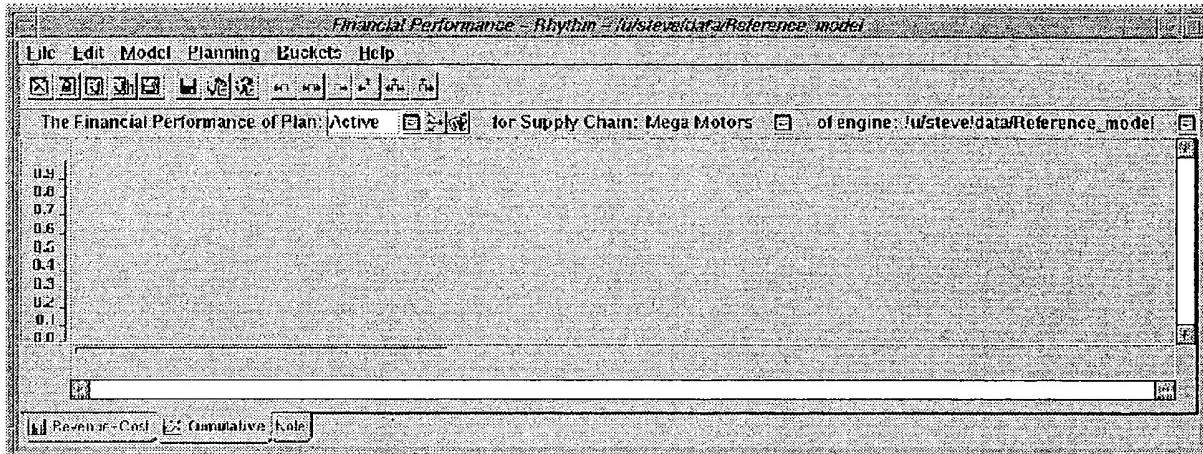
The *Revenue-Cost* tab displays the financial performance of the specified plan in a bar chart. The chart shows the performance of this plan as it relates to revenue and cost. See FIGURE 151.

##### 4.7.4.2 Cumulative

The *Cumulative* tab displays the financial performance of the specified plan in a line chart. The chart shows the performance of this plan as it relates to cumulative figures. See FIGURE 152.

**FIGURE 152**

Cumulative Layout



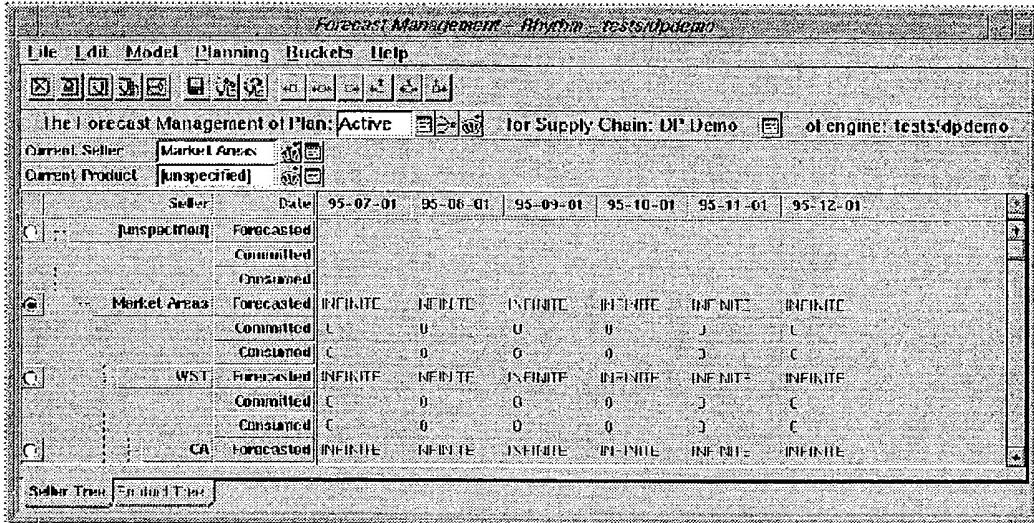
## 4.8 Forecast Management

### 4.8.1 Description

The *Forecast Management* report provides a means of managing the raw and committed forecasts for a product or product group of a seller or its organization. This section describes the *Forecast Management* report. See FIGURE 153.

FIGURE 153

Forecast Management



### 4.8.2 Model Relationships

The following models are related to the *Forecast Management* report.

Parent Model: Seller\_Plan

Submodels: Forecast

#### 4.8.3 Viewing Forecast Management

To display the *Forecast Management* report:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Demand</i> (in <i>Plan</i> tree) or <i>Products</i> or <i>Sellers</i> (in <i>Demand</i> tree) from the list of <i>Domains</i> . |
| 4    | Select <i>Forecast Management</i> from the list of <i>Reports/Activities for Demand</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Forecast Management</i> report displays.   |
| 6    | (To view forecast management for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)            |

#### 4.8.4 Forecast Management Report Components

The *Forecast Management* report is divided into two sections. The top section contains basic information about the forecasts, and has layouts with seller and product information for forecasts. It also displays the chosen seller and product or product group. Select the *Choose* button to display a list of the other sellers or products that can be chosen. Select the *Report* button to display the *Seller Editor* or the *Product Editor*. The bottom section of the report contains information about the forecast for the chosen product of the chosen seller, including forecasted, committed, and consumed amounts for products. The following subsections describe the layouts of the *Forecast Management* report.

##### 4.8.4.1 Seller Tree

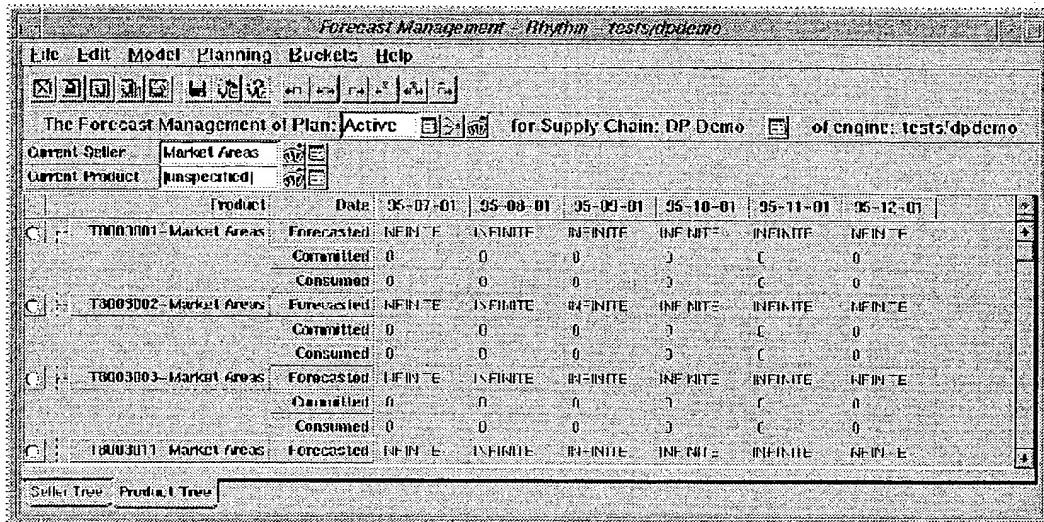
The *Seller Tree* tab displays the forecast entries for the chosen product for each seller in the chosen seller's organization. See FIGURE 153.

##### 4.8.4.2 Product Tree

The *Product Tree* tab (in contrast to the *Seller Tree* tab) displays the forecast entries for the tree of product groups containing the chosen product group, all within the chosen seller. See FIGURE 154.

FIGURE 154

Product Tree Layout



#### 4.8.4.3 Seller and Product Tree Components

The information in the *Seller Tree* and *Product Tree* tabs is as follows:

| Column Name | Description   |
|-------------|---|
| Forecasted  | The quantity of this product or product group that the seller believes can be sold for the specified delivery dates. This is market potential. This may be an aggressive forecast, but it is NOT commitment. Rather, it is an upper bound on what can be committed.   |
| Committed   | The quantity of this product or product group that the seller is willing to commit to selling for the specified delivery dates. This could also be called "requested ATP". It is the quantity that will be allocated as available_to.promise for this particular seller as long as it is feasible to produce. |
| Consumed    | The total quantity of the product for which actual promises have been made for the specified delivery dates, consuming the forecast entry's allocation.   |

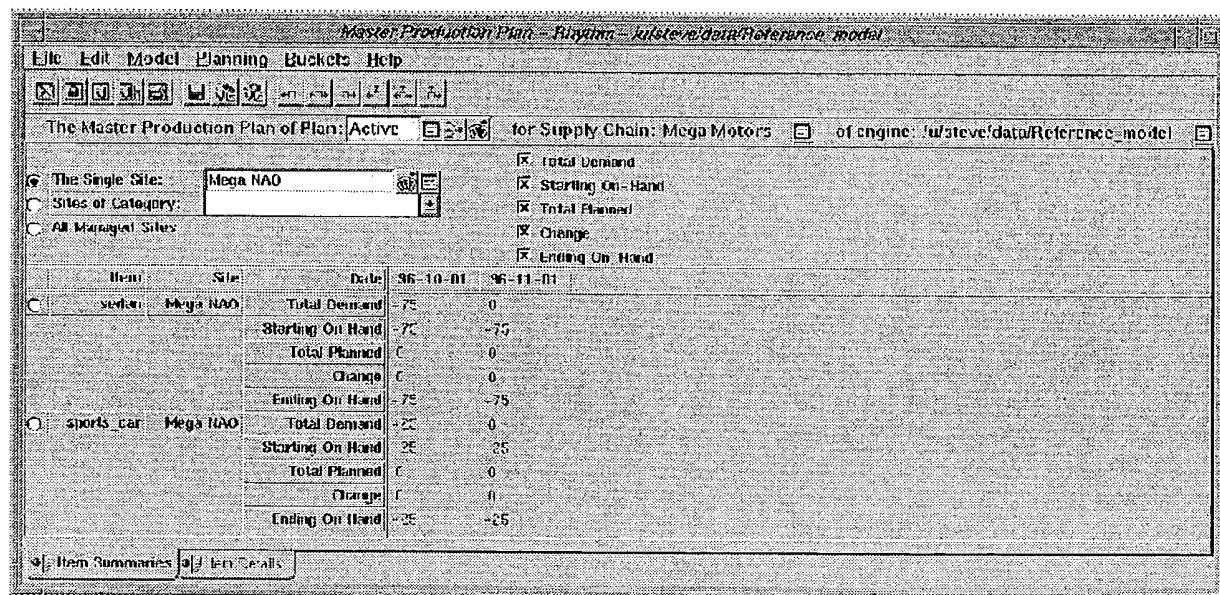
## 4.9 Master Production Plan

### 4.9.1 Description

The *Master Production Plan* report allows viewing of production levels planned for the items in a single site or all managed sites. See FIGURE 155. The report also provides a filter, *Sites of Category*, that allows a user to locate and display sites of a certain category.

FIGURE 155

Master Production Plan



### 4.9.2 Model Relationships

The following models are related to the *Master Production Plan* report.

Parent Model: Seller

Submodels: Site\_Group, Product\_Root, Product, and Product\_Group

#### 4.9.3 Viewing Master Production Plans

To display the *Master Production Plan* report:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select either <i>Site</i> (in <i>Plan</i> tree), <i>Distribution</i> (in <i>Site</i> tree) or <i>Manufacturing</i> (in <i>Site</i> tree) from the list of <i>Domains</i> . |
| 4    | Select <i>Master Production Plan</i> from the list of <i>Reports/Activities for Sites</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Master Production Plan</i> report displays.   |
| 6    | (To view the <i>Master Production Plan</i> for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)                               |

#### 4.9.4 Master Production Plan Report Description

The *Master Production Plan* report contains two layouts. The top section allows the user to choose a site or all managed sites and to choose which of several fields to display for each item at the chosen site. Selecting or de-selecting these choices determines what is displayed in the bottom section. Select the *Choose* button (next to site) to choose a different site. Select the *Report* button to display the *Site Editor* for the specific site chosen. The bottom section contains information on *Item Summaries* such as *Item*, *Site*, and *Date*, or *Item Details*, such as *Total Demand*, *Starting On-Hand*, *Total Planned Change*, and *Ending On-Hand* amounts.

##### 4.9.4.1 Item Summaries Tab

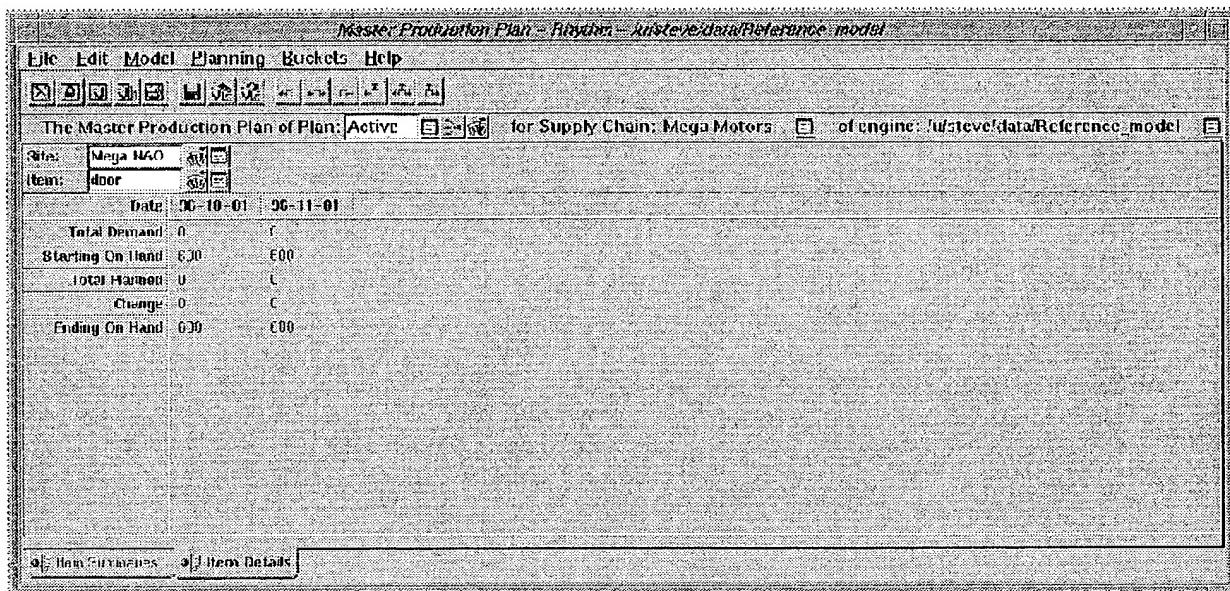
The *Item Summaries* layout displays the selected information (from top section) about all products within a site or all products within all managed sites. From this tab, the user can use the radio button in the left most column to choose a particular item to display in the *Item Details* tab.

#### 4.9.4.2 Item Details Tab

The *Item Details* tab displays all of the fields for the chosen item. Only one item is displayed at a time. See FIGURE 156. Select the *Choose* button immediately to the right of the *Site* or *Item* name to choose a different site or item. Select the button to the far right of the Site or Item name to display the *Site Editor* or *Item Editor*, respectively. The *Item Editor* is accessible from the *Item Details* tab.

**FIGURE 156**

Item Details Layout



#### 4.9.4.3 Item Summaries and Item Details Tab Components

The information in the *Item Summaries* and the *Item Details* tabs is as follows:

| Column Name      | Description   |
|------------------|---|
| Item             | The name of the item.   |
| Site             | The particular site being looked at.  |
| Date             | Date or range of dates for which the information pertains to.                               |
| Total Demand     | The total number of requests for this item for which promises have been made.               |
| Starting On Hand | The number of the particular item that is on hand at the beginning of the production cycle. |
| Total Planned    | The total planned number of items to be used during this production cycle.                  |
| Change           | The difference between <i>Starting On Hand</i> and <i>Ending On Hand</i> .                  |
| Ending On Hand   | The number of the particular item that is on hand at the end of the production cycle.       |

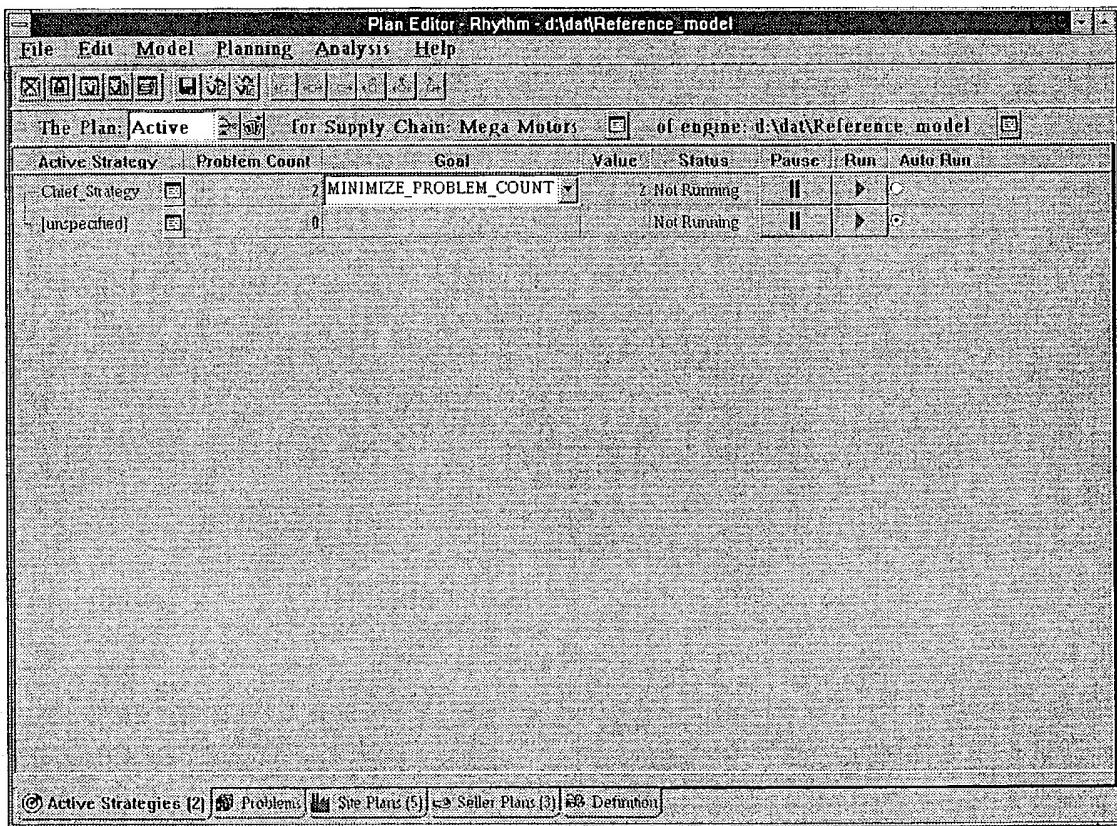
## 4.10 Master Purchase Plan

### 4.10.1 Description

*Master Purchase Plan* is an activity for a plan (rather than a standalone report) and displays as the *Active Strategies* tab of the *Plan Editor*. The *Active Strategies* tab displays the active strategy information for the specified plan. See FIGURE 157.

FIGURE 157

Master Purchase Plan



#### 4.10.2 Viewing the Master Purchase Plan

To view the *Master Purchase Plan*, take the following steps:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>Plan</i> , <i>Site</i> (in <i>Plan</i> tree) or <i>Manufacturing</i> (in <i>Site</i> tree) from the list of <i>Domains</i> .       |
| 4    | Select <i>Master Purchase Plan</i> from the list of <i>Reports/Activities for Plans</i> .  |
| 5    | Click <i>Display Report</i> . The <i>Master Purchase Plan</i> report displays.   |
| 6    | (To view the <i>Master Production Plan</i> for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |

#### 4.10.3 Master Purchase Plan Components

The information in the *Active Strategies* tab of the *Plan Editor* is as follows:

**Table 20: Master Purchase Plan Components**

| Column Name     | Description  |
|-----------------|--|
| Active Strategy | The name of the active strategies defined for the specified plan       |
| Problem Count   | The number of problems currently within the plan                       |
| Goal            | The goal that has been specified for the plan                          |
| Value           | The value given to that goal   |
| Status          | The current status of the active strategy (i.e., running, not running) |
| Pause           | The button used to pause a strategy that is running                    |
| Run             | The button used to invoke a strategy                                   |
| Auto Run        | The area used to declare a strategy as <i>auto_run</i>                 |

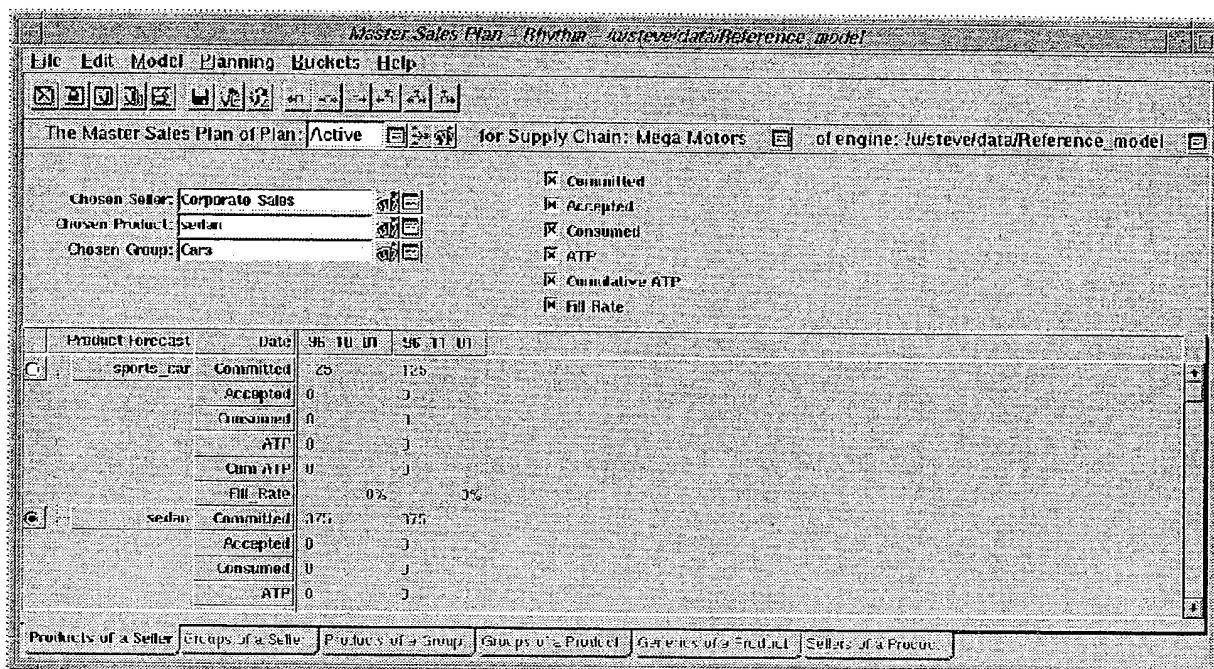
## 4.11 Master Sales Plan

### 4.11.1 Description

The *Master Sales Plan* report allows viewing of sales plans for a specific seller. See FIGURE 158. This report allows the user to filter for a seller, a product, and a product group.

FIGURE 158

Master Sales Plan



### 4.11.2 Model Relationships

The following models are related to the *Master Sales Plan* report.

Parent Model: Plan

Submodels: Site\_Plan, Seller\_Plan, Problem, and Active\_Strategy

### 4.11.3 Viewing Master Sales Plans

To display the *Master Sales Plan* report:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Demand</i> (in <i>Plan</i> tree) or <i>Products</i> or <i>Sellers</i> (in <i>Demand</i> tree) from the list of <i>Domains</i> . |
| 4    | Select <i>Master Sales Plan</i> from the list of <i>Reports/Activities for Demand</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Master Sales Plan</i> report displays.   |
| 6    | (To view the <i>Master Sales Plan</i> for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)   |

### 4.11.4 Master Sales Plan Report Components

The *Master Sales Plan* report is divided into two sections of information with layouts of *Products of a Seller*, *Groups of a Seller*, *Products of a Group*, *Groups of a Product*, *Generics of a Product*, and *Sellers of a Product*. The top section allows the user to choose a seller, a product, and a group and to choose which of several fields to display for each chosen product of the chosen seller. Select the *Choose* button to display a list of the sellers, products, or groups from which to choose. Select the *Report* button to display the *Seller Editor*, the *Product Editor*, or the *Product Group Editor*. The bottom section of both layouts contains information about the chosen product of the chosen seller, such as forecasted and committed amounts. The following subsections describe the layouts of the *Master Sales Plan* report.

#### 4.11.4.1 Products of a Seller

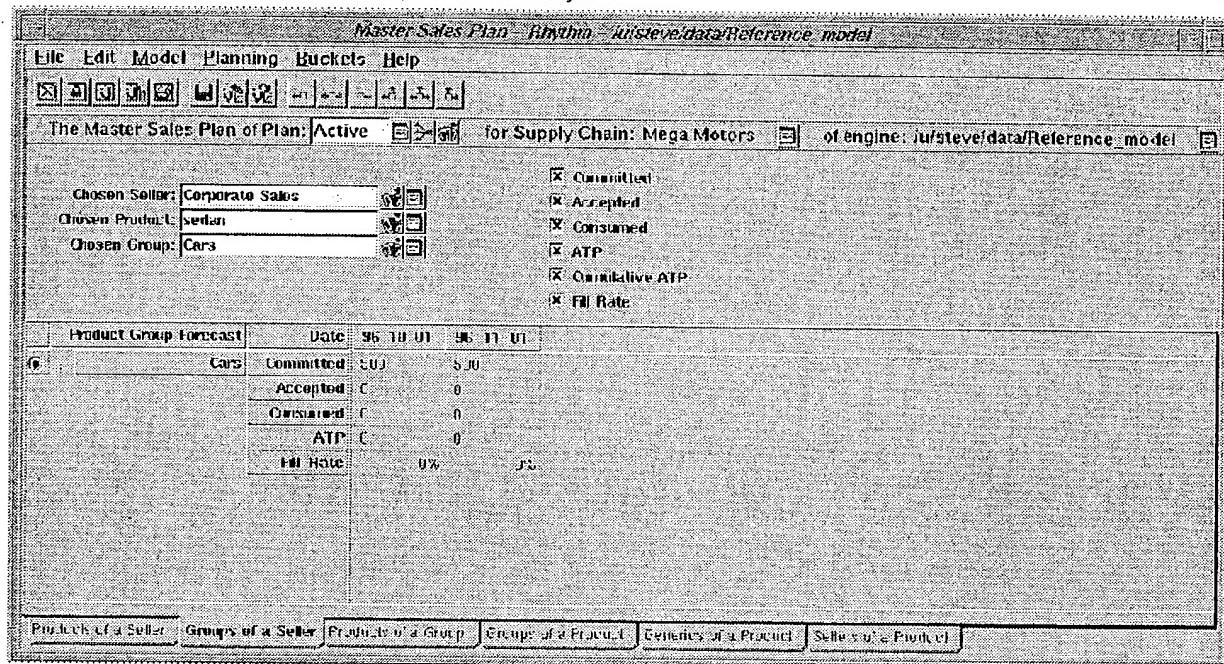
The *Products of a Seller* tab displays the forecast entries for the chosen product for each seller in the chosen seller's organization. See FIGURE 158.

#### 4.11.4.2 Groups of a Seller

The *Groups of a Seller* tab (in contrast to the *Products of a Seller* tab) displays the forecast entries for the tree of product groups containing the chosen product group, all within the chosen seller. See FIGURE 159.

FIGURE 159

Groups of a Seller Layout

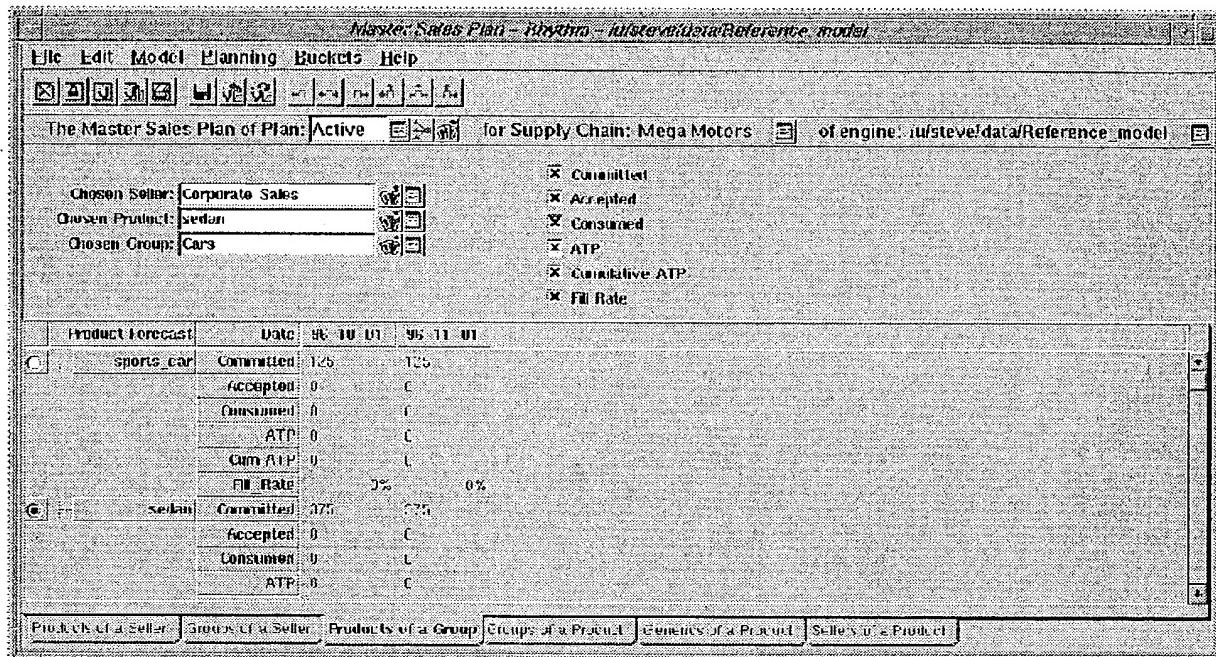


#### 4.11.4.3 Products of a Group

The *Products of a Groups* tab (in contrast to the other tabs) displays the forecast entries for the tree of product groups containing the chosen product, all within the chosen seller. See FIGURE 160.

**FIGURE 160**

Products of a Group Layout

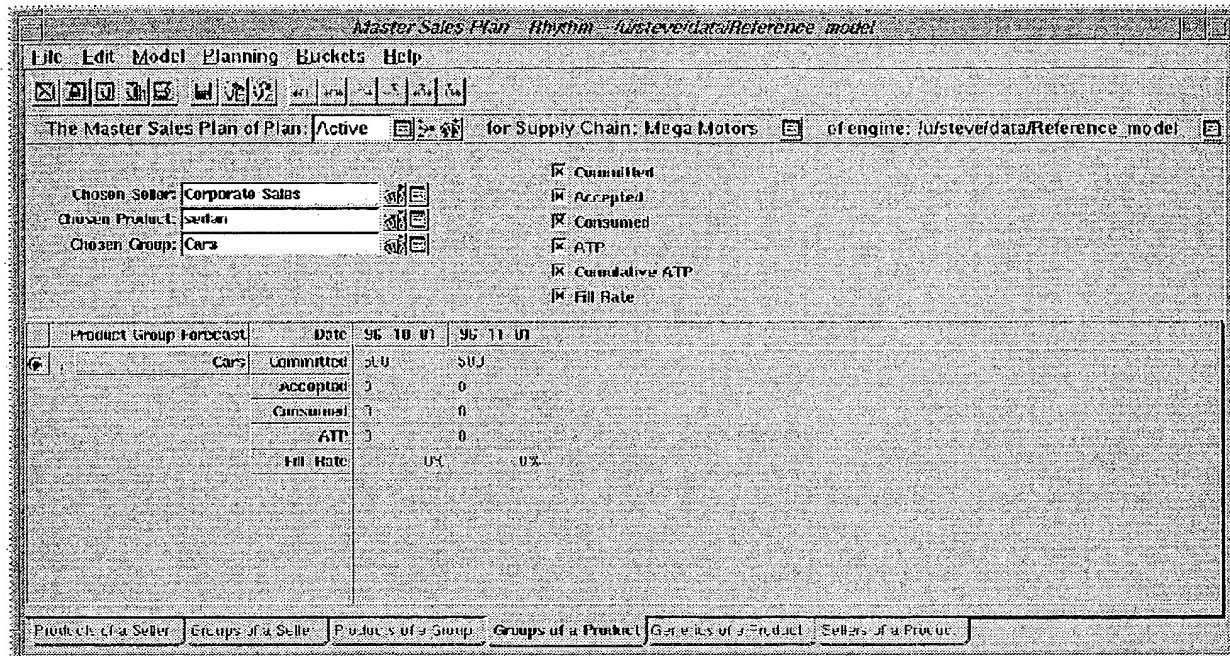


#### 4.11.4.4 Groups of a Product

The *Groups of a Product* tab (in contrast to the other tabs) displays the forecast entries for the tree of product groups containing the chosen product group, all within the chosen seller. See FIGURE 161.

**FIGURE 161**

Groups of a Product Layout

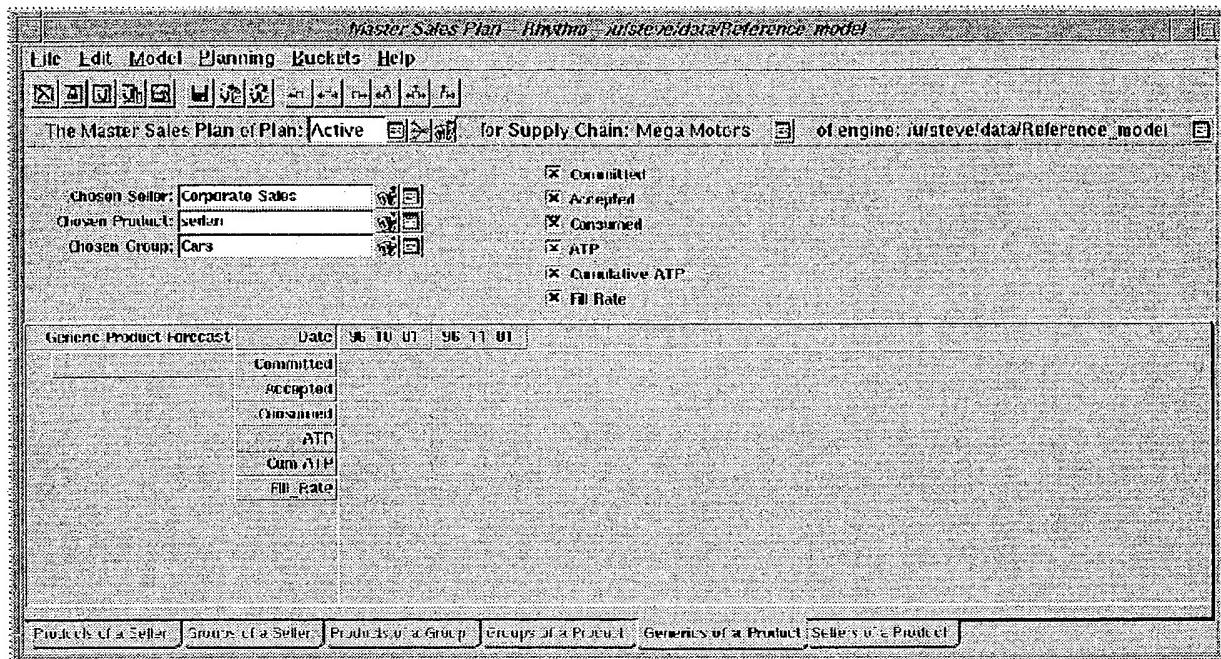


#### 4.11.4.5 Generics of a Product

The *Generics of a Product* tab (in contrast to the other tabs) displays the forecast entries for the tree of product groups containing the chosen product, all within the chosen seller. See FIGURE 162.

**FIGURE 162**

Generics of a Product Layout

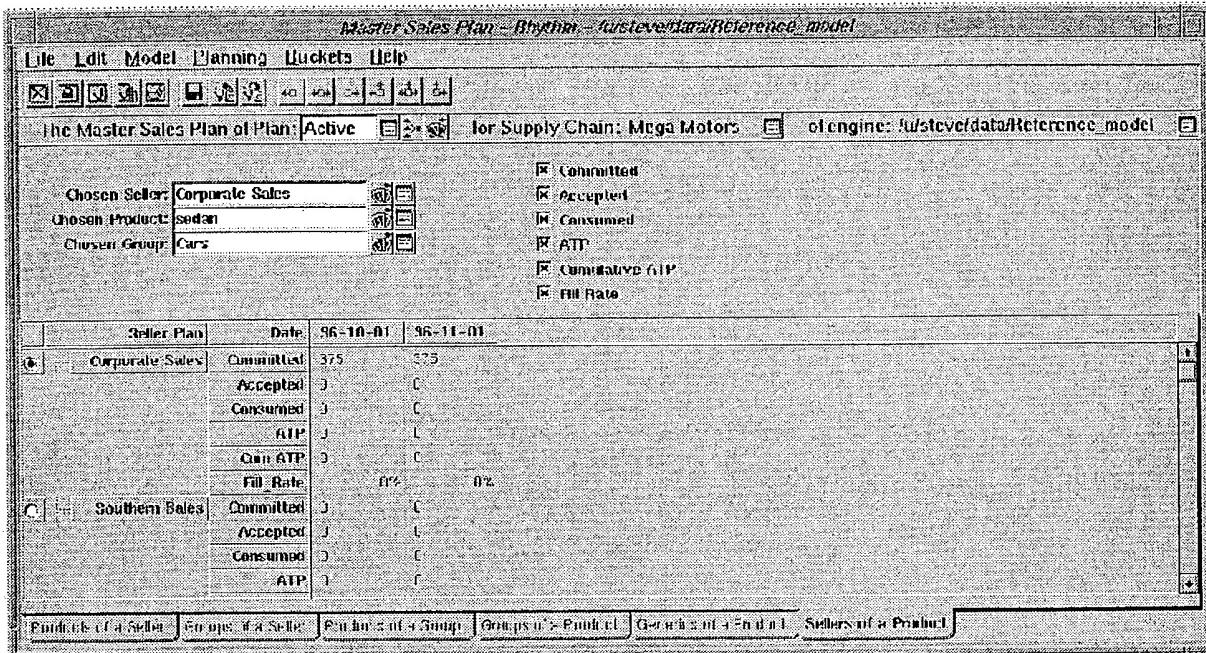


#### 4.11.4.6 Sellers of a Product

The *Sellers of a Product* tab (in contrast to the other tabs) displays the forecast entries for the tree of sellers containing the chosen product, all within the chosen seller. See FIGURE 163.

FIGURE 163

Sellers of a Product Layout



#### 4.11.4.7 Master Sales Plan Tab Components

The information in the *Master Sales Plan* tabs is as follows:

| Column Name    | Description  |
|----------------|--|
| Forecasted     | The quantity of the product the seller believes can be sold for the specified delivery dates.  |
| Committed      | The quantity of the product that the seller is willing to commit to selling for the specified delivery dates.  |
| Allocated      | The quantity of the product for which promises have been allocated to this seller for the specified delivery dates.                                    |
| Consumed       | The total quantity of the product for which actual promises have been made for the specified delivery dates, consuming the forecast entry's allocated. |
| ATP            | The uncommitted portion of inventory or planned production for the product being sold by this seller.  |
| Cumulative ATP | The accumulated amount of uncommitted inventory or planned production for the product being sold by this seller.                                       |

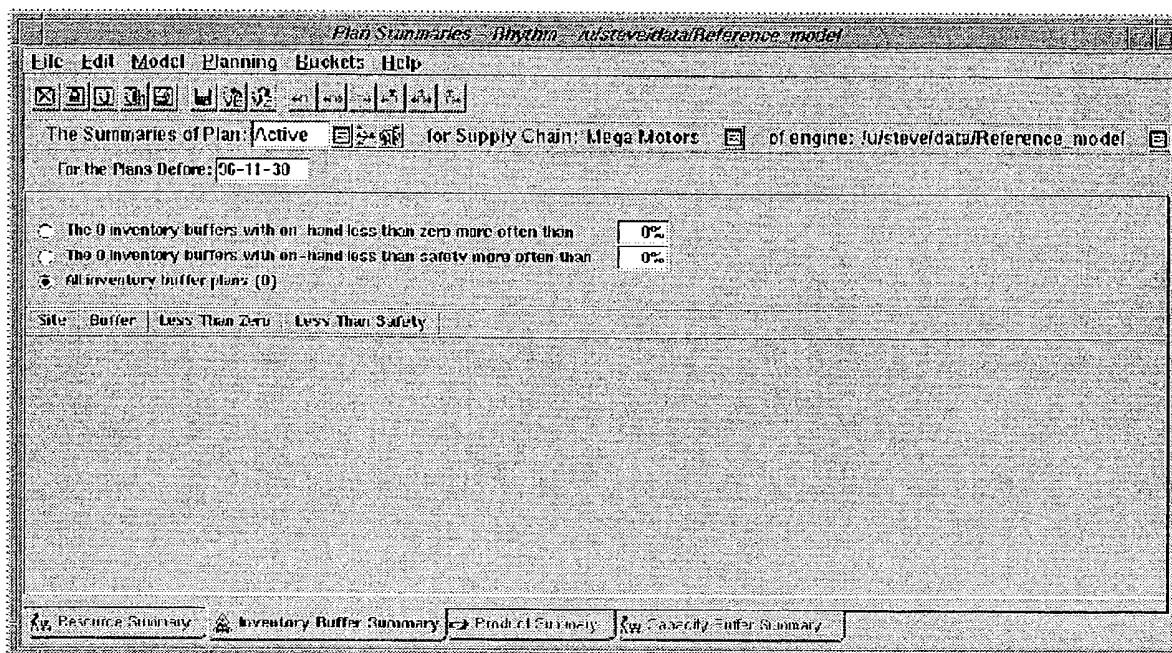
## 4.12 On-Hand Summary

### 4.12.1 Description

*On-Hand Summary* is an activity for a plan (rather than a standalone report) and displays as the *Inventory Buffer Summary* tab of the *Plan Summaries* report. The *Inventory Buffer Summary* tab displays the on-hand inventory buffer information for the specified plan. See FIGURE 164.

FIGURE 164

On-Hand Summary



### 4.12.2 Viewing On-Hand Summary

To display the *On-Hand Summary* report, take the following steps:

| Step | Action   |
|------|--|
| 1    | Display the <i>Main Explorer</i> report.   |
| 2    | Select the plan of interest.   |
| 3    | Select <i>FLO Network</i> (in <i>Plan</i> tree) from the list of <i>Domains</i> .  |
| 4    | Select <i>On-Hand Summary</i> from the list of <i>Reports/Activities for FLO Networks</i> .  |
| 5    | Click <i>Display Report</i> . The <i>On-Hand Summary</i> report displays.  |
| 6    | (To view the <i>On-Hand Summary</i> report for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |

#### 4.12.3 On-Hand Summary Components

The *On-Hand Summary* report (which displays as the *Inventory Buffer Summary* tab) displays on-hand inventory information for all buffers of the particular plan.

The information is displayed in columns and provides the site name, and each buffer type. It also shows when stock is less than zero or less than safety. The information displayed in the bottom section of this report can be modified (using the items in the top section) to show the following:

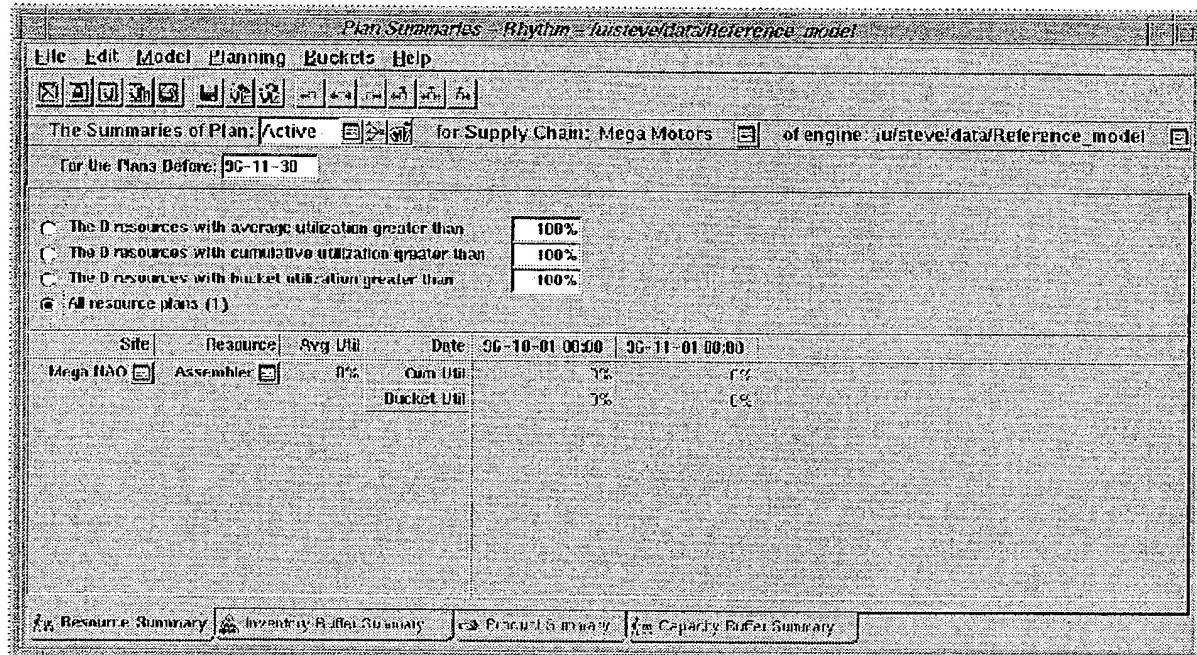
| Choice  | Description  |
|---|--|
| inventory buffers with on-hand less than zero more often than $x\%$   | The number of buffer plans for the chosen plan with an on-hand amount less than zero more often than $x\%$ of the specified time bucket.       |
| inventory buffers with on-hand less than safety more often than $x\%$ | The number of buffer plans for the chosen plan with an on-hand amount less than safety more often than $x\%$ during the specified time bucket. |
| All inventory buffer plans  | All buffer plans for the chosen plan; no filtering.  |

## 4.13 Plan Summaries

The *Plan Summaries* report provides a plan overview for all resources, buffers, and products. This section describes the *Plan Summaries* report. See FIGURE 165.

FIGURE 165

Plan Summaries



### 4.13.1 Model Relationships

The following models are related to the *Plan Summaries* report.

Parent Model: Plan

Submodels: Site\_Plan, Seller\_Plan, Problem, and Active\_Strategy

#### 4.13.2 Viewing Plan Summaries

To display the *Plan Summaries* report:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Plan</i> or <i>FLO Network</i> (in <i>Plan</i> tree) from the list of <i>Domains</i> .                            |
| 4    | Select <i>Plan Summaries</i> from the list of <i>Reports/Activities for Plans</i> .   |
| 5    | Click <i>Display Report</i> . The <i>Plan Summaries</i> report displays.  |
| 6    | (To view the plan summary for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |

#### 4.13.3 Plan Summary Report Components

The *Plan Summaries* report is divided into two sections of information, with resource, inventory buffer, product, and capacity buffer summaries tabs. The top section allows the user to choose which of several fields to use for filtering information about resources/buffers/products which is then displayed in the bottom section. The percentages can be modified to alter the display of results.

The following subsections describe the tabs of the *Plan Summaries* report.

##### 4.13.3.1 Resource Summary

The *Resource Summary* tab displays summarized information for all resources of a particular plan. See FIGURE 165. The top section of the *Resource Summary* tab allows the user to choose which of several fields to use for filtering information that is then displayed in the bottom portion of the tab.

| Choice  | Description  |
|---|--|
| resources with average utilization greater than x%    | The number of resources for the chosen plan that has average utilization greater than x%.    |
| resources with cumulative utilization greater than x% | The number of resources for the chosen plan that has cumulative utilization greater than x%. |
| resources with bucket utilization greater than x%     | The number of resources for the chosen plan that has bucket utilization greater than x%.     |
| All resource plans                                    | All plans for all resources; no filtering.   |

#### **4.13.3.2 Resource Summary Tab Components**

The information in the bottom section of the *Resource Summary* tab provides the site name, the resource name, utilization, and dates. From the menu bar, the *Buckets* can be changed to alter the display of information in this report. The *Resource Plan Editor* can be displayed by selecting the *Report* button next to each resource. The *Site Editor* is displayed by selecting the *Report* button next to a site. The information in the *Resource Summary* tab is as follows:

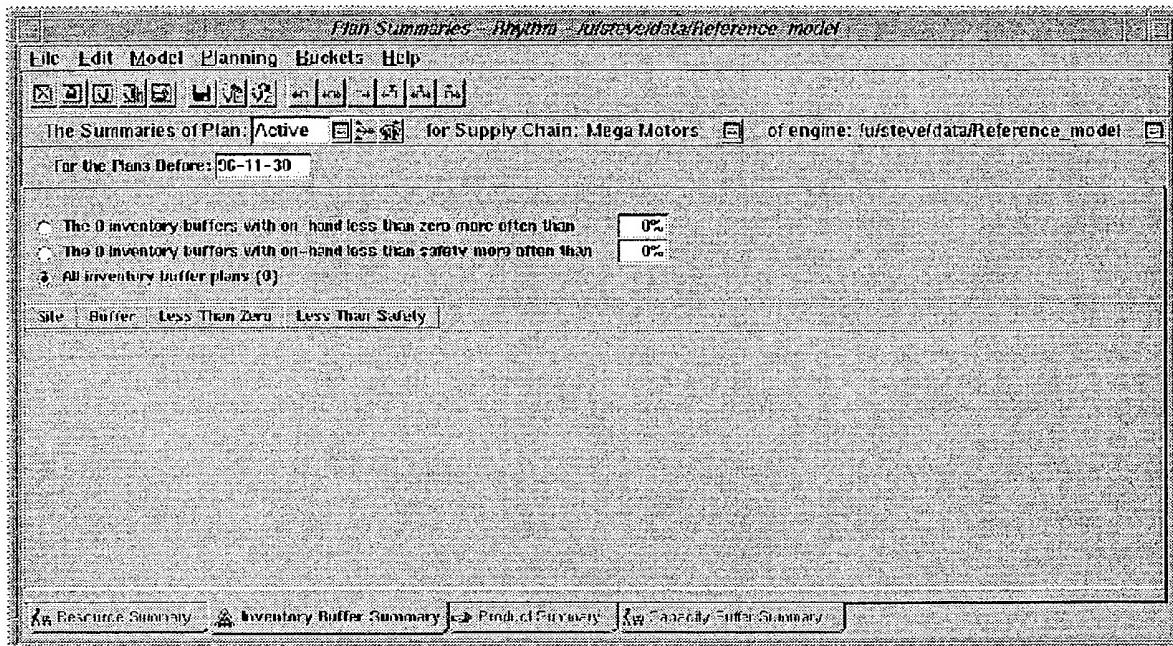
| Column Name            | Description   |
|------------------------|---|
| Site                   | The particular site being looked at.  |
| Resource               | The item that is being used to add value to the product.                    |
| Average Utilization    | The average utilization of all resources used in this plan.                 |
| Date                   | The date or date range for which the information pertains to.               |
| Cumulative Utilization | The accumulated utilization of all resources used in this plan.             |
| Bucket Utilization     | The utilization of all resources within the specified bucket (time period). |

#### 4.13.3.3 Inventory Buffer Summary

The *Inventory Buffer Summary* tab displays information for all buffers of the particular plan. See FIGURE 166.

FIGURE 166

Inventory Buffer Summary Layout



The information is displayed in columns and provides the site name, and each buffer type. It also shows when stock is less than zero or less than safety. The information displayed in the bottom section of this report can be modified (using the items in the top section) to show the following:

| Choice   | Description   |
|--|---|
| buffers with on-hand less than zero more often than x%   | The number of buffer plans for the chosen plan with an on-hand amount less than zero more often than x% of the specified time bucket.       |
| buffers with on-hand less than safety more often than x% | The number of buffer plans for the chosen plan with an on-hand amount less than safety more often than x% during the specified time bucket. |
| All buffer plans   | All buffer plans for the chosen plan; no filtering.   |

#### **4.13.3.4 Inventory Buffer Summary Tab Components**

The bottom section of the *Inventory Buffer Summary* tab provides information about the buffers that meet the criteria as set forth in the selected lines in the top section of this report. From the menu bar, the *Buckets* can be changed to alter the display of information in this report. The *Buffer Plan Editor* can be displayed by selecting the button next to each resource. The *Site Editor* is displayed by selecting the button next to a site. The information in the *Inventory Buffer Summary* tab is as follows:

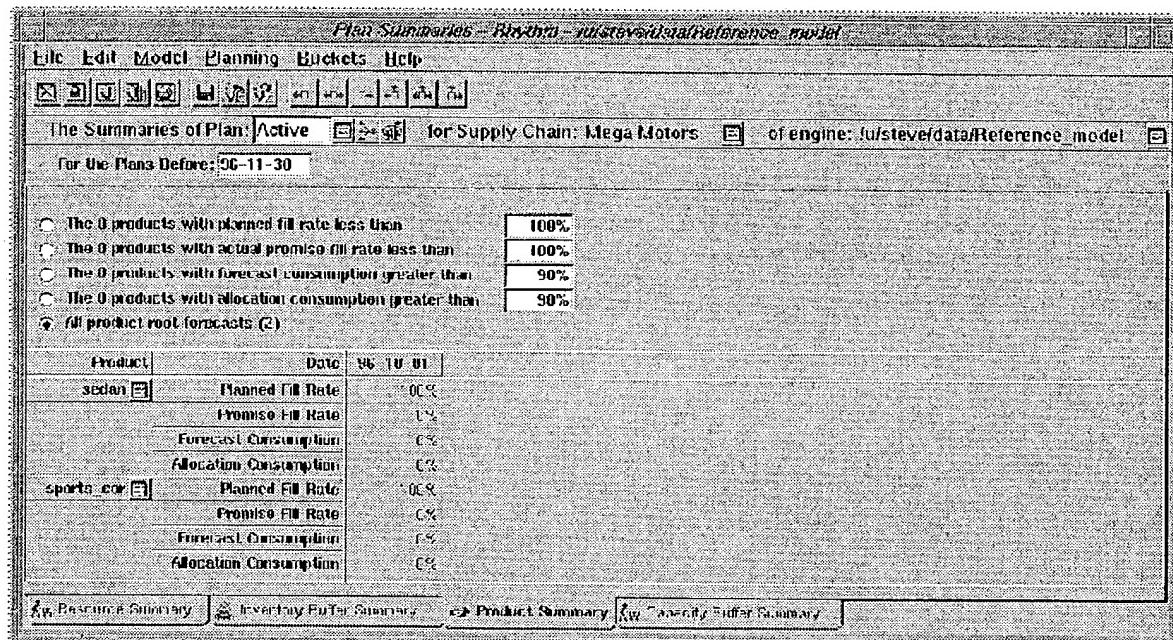
| <b>Column Name</b> | <b>Description</b>  |
|--------------------|---|
| Site               | The particular site for which information is being displayed.                                 |
| Buffer             | The buffer being examined.  |
| Less than Zero     | The number of buffers with on-hand less than zero more often than the specified percentage.   |
| Less than Safety   | The number of buffers with on-hand less than safety more often than the specified percentage. |

#### 4.13.3.5 Product Summary

The *Product Summary* tab displays summarized information for all products of the particular plan. See FIGURE 167.

FIGURE 167

Product Summary Layout



The information is displayed in columns and provides the product, dates, fill rates, and consumption. The information displayed in the bottom section of this report can be modified (using the items in the top section) to show the following:

| Choice   | Description  |
|--|--|
| products with planned fill rate less than x%         | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (planned) is less than x% of the committed amount.     |
| products with actual promise fill rate less than x%  | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (planned) is less than x% of the consumed amount.      |
| products with forecast consumption greater than x%   | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (consumed) is greater than x% of the committed amount. |
| products with allocation consumption greater than x% | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (consumed) is greater than x% of the allocated amount. |

| Choice                     | Description                                      |
|----------------------------|--|
| All product root forecasts | All of the root product forecasts; no filtering. |

#### 4.13.3.6 Product Summary Tab Components

The bottom section of the *Product Summary* tab provides information about the products that meet the criteria as set forth in the selected lines in the top section of this report. From the menu bar, the *Buckets* can also be changed to alter the display of information in this report. The *Forecast Editor* can be displayed by selecting the *Report* button next to each product. The information in the *Product Summary* tab is as follows:

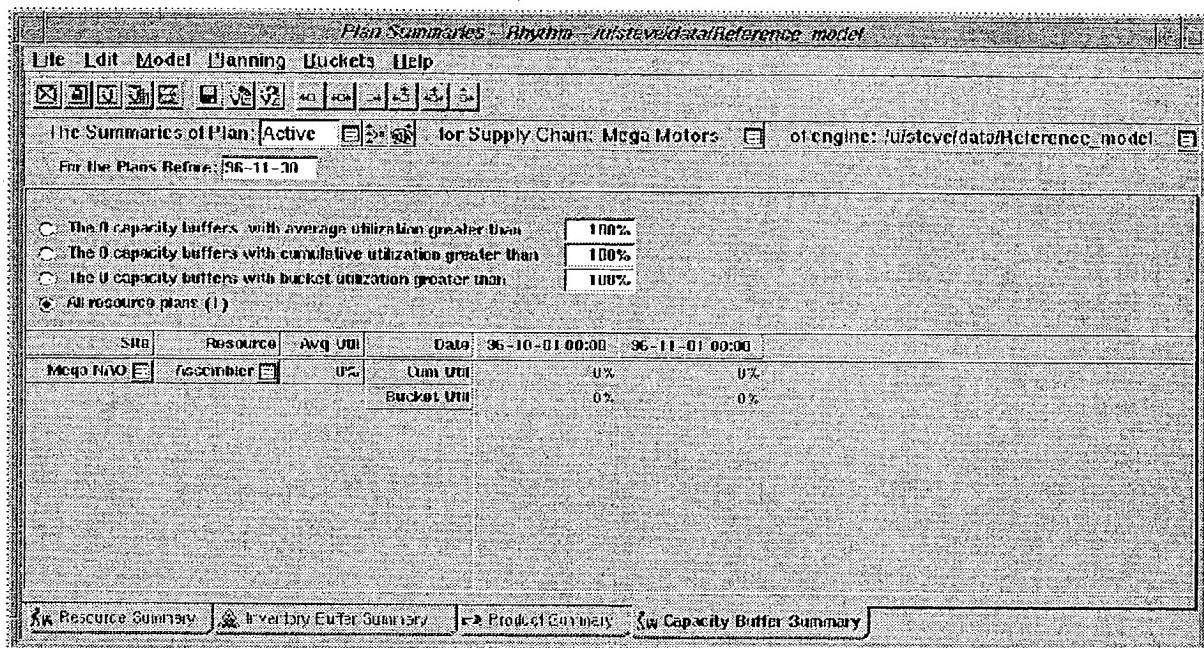
| Column Name            | Description   |
|------------------------|---|
| Product                | The item number for the product.  |
| Date                   | The date or date range for which the information pertains to.   |
| Planned Fill Rate      | The ratio between planned and committed amounts of a product or product group. This value represents the percentage of products with a planned fill rate less than x%.        |
| Promise Fill Rate      | The ratio between planned and consumed amounts of the product or product group. This value represents the percentage of products with a promise fill rate less than x%.       |
| Forecast Consumption   | The ratio between consumed and forecasted amounts of a product or product group. This value represents the percentage of products with forecast consumption greater than x%.  |
| Allocation Consumption | The ratio between consumed and allocated amounts of a product or product group. This value represents the percentage of products with allocation consumption greater than x%. |

#### 4.13.3.7 Capacity Buffer Summary

The *Capacity Buffer Summary* tab displays information for all buffers of the particular plan. See FIGURE 168.

FIGURE 168

Capacity Buffer Summary Layout



The information that displays is summarized information for all capacity buffers of a particular plan. See FIGURE 168. The top section of the *Capacity Buffer Summary* tab allows the user to choose which of several fields to use for filtering information that is then displayed in the bottom portion of the tab.

| Choice   | Description  |
|--|--|
| capacity buffers with average utilization greater than x%    | The number of resources for the chosen plan that has average utilization greater than x%.    |
| capacity buffers with cumulative utilization greater than x% | The number of resources for the chosen plan that has cumulative utilization greater than x%. |
| capacity buffers with bucket utilization greater than x%     | The number of resources for the chosen plan that has bucket utilization greater than x%.     |
| All resource plans   | All plans for all resources; no filtering.   |

#### 4.13.3.8 Capacity Buffer Summary Tab Components

The information in the bottom section of the *Capacity Buffer Summary* tab provides the site name, the resource name, utilization, and dates. From the menu bar, the *Buckets* can be changed to alter the display of information in this report. The *Resource Plan Editor* can be displayed by selecting the *Report* button next to each resource. The *Site Editor* is displayed by selecting the *Report* button next to a site. The information in the *Capacity Buffer Summary* tab is as follows:

| Column Name            | Description   |
|------------------------|---|
| Site                   | The particular site being looked at.  |
| Resource               | The item that is being used to add value to the product.                    |
| Average Utilization    | The average utilization of all resources used in this plan.                 |
| Date                   | The date or date range for which the information pertains to.               |
| Cumulative Utilization | The accumulated utilization of all resources used in this plan.             |
| Bucket Utilization     | The utilization of all resources within the specified bucket (time period). |

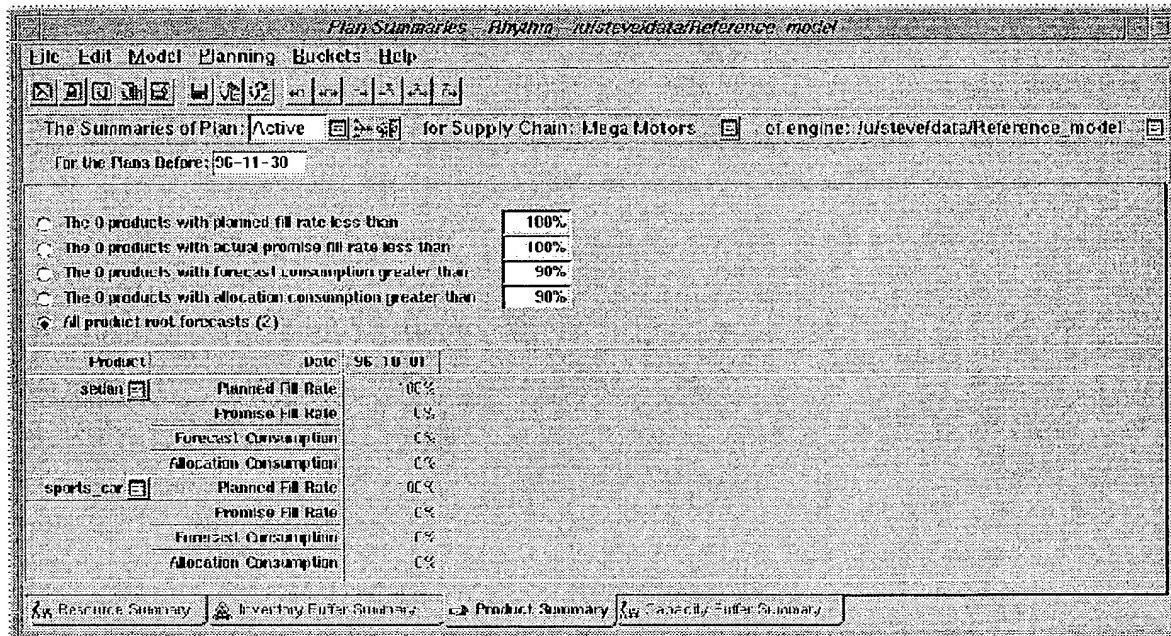
## 4.14 Problem Summary

### 4.14.1 Description

*Problem Summary* is an activity for a plan (rather than a standalone report) and displays as the *Product Summary* tab of the *Plan Summaries* report. The *Product Summary* tab displays summarized information for each product within the specified plan. See FIGURE 169.

FIGURE 169

Problem Summary



The information is displayed in columns and provides the product, dates, fill rates, and consumption. The information displayed in the bottom section of this report can be modified (using the items in the top section) to show the following:

| Choice   | Description   |
|--|---|
| products with planned fill rate less than $x\%$        | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (planned) is less than $x\%$ of the committed amount. |
| products with actual promise fill rate less than $x\%$ | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (planned) is less than $x\%$ of the consumed amount.  |

| Choice  | Description   |
|---|---|
| products with forecast consumption greater than $x\%$   | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (consumed) is greater than $x\%$ of the committed amount. |
| products with allocation consumption greater than $x\%$ | The number of products for the chosen plan that have at least one time bucket for which the total volume of actuals (consumed) is greater than $x\%$ of the allocated amount. |
| All product root forecasts                              | All of the root product forecasts; no filtering.  |

#### 4.14.1.1 Product Summary Tab Components

The bottom section of the *Product Summary* tab provides information about the products that meet the criteria as set forth in the selected lines in the top section of this report. From the menu bar, the *Buckets* can also be changed to alter the display of information in this report. The *Forecast Editor* can be displayed by selecting the *Report* button next to each product. The information in the *Product Summary* tab is as follows:

| Column Name            | Description   |
|------------------------|---|
| Product                | The item number for the product.  |
| Date                   | The date or date range for which the information pertains to.   |
| Planned Fill Rate      | The ratio between planned and committed amounts of a product or product group. This value represents the percentage of products with a planned fill rate less than $x\%$ .        |
| Promise Fill Rate      | The ratio between planned and consumed amounts of the product pr product group. This value represents the percentage of products with a promise fill rate less than $x\%$ .       |
| Forecast Consumption   | The ratio between consumed and forecasted amounts of a product or product group. This value represents the percentage of products with forecast consumption greater than $x\%$ .  |
| Allocation Consumption | The ratio between consumed and allocated amounts of a product or product group. This value represents the percentage of products with allocation consumption greater than $x\%$ . |

#### **4.14.2 Viewing Problem Summary**

To display the *Problem Summary* report:

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| 1           | Display the <i>Main Explorer</i> report.  |
| 2           | Select the plan of interest.  |
| 3           | Select <i>Requests/Promises</i> (in the <i>Demand</i> tree) <i>Site</i> (in the <i>Plan</i> tree), <i>Distribution</i> or <i>Manufacturing</i> (both in <i>Site</i> tree) from the list of <i>Domains</i> . |
| 4           | Select <i>Plan Summaries</i> from the list of <i>Reports/Activities for Requests/Promises</i> .   |
| 5           | Click <i>Display Report</i> . The <i>Plan Summaries</i> report displays.  |
| 6           | (To view the plan summary for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.)   |

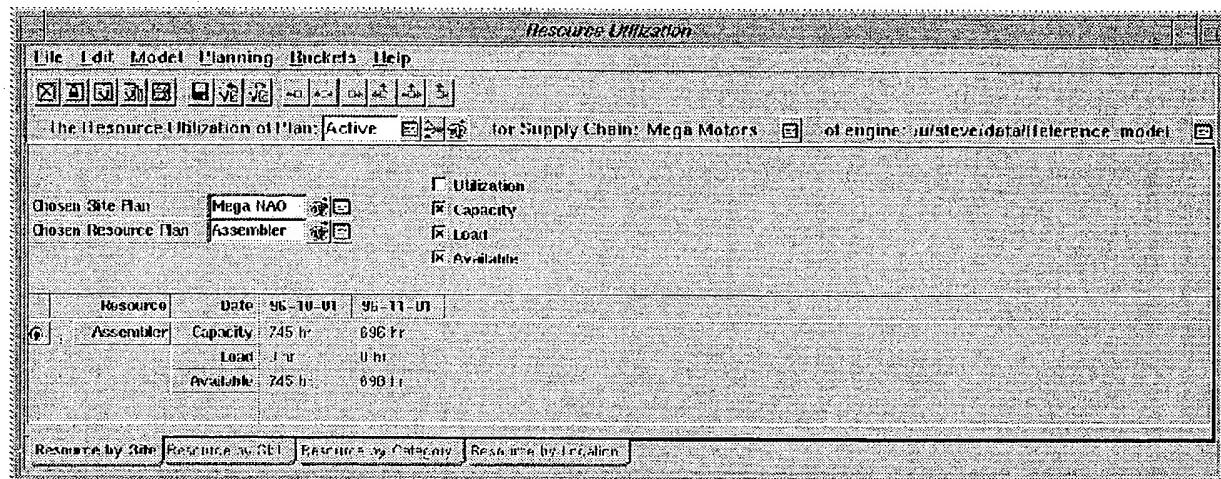
## 4.15 Resource Utilization

### 4.15.1 Description

The Resource Utilization report allows a user to view the resource utilization for a specified resource on a specified site plan. See FIGURE 170.

FIGURE 170

Resource Utilization



### 4.15.2 Model Relationships

The following models are related to the Resource Utilization report:

Parent Model:

Submodels:

### 4.15.3 Viewing Resource Utilization

To view the *Resource Utilization* report, take the following steps:

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>Resource</i> (in <i>FLO Network</i> tree) from the list of <i>Domains</i> .   |
| 4    | Select <i>Resource Utilization</i> from the list of <i>Reports/Activities for Resources</i> .                                       |
| 5    | Click <i>Display Report</i> . The <i>Resource Utilization</i> report displays.  |
| 6    | (To view the resource utilization for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |

#### 4.15.4 Resource Utilization Report Components

The *Resource Utilization* report is divided into two sections of information with site, skill, category, and resource tabs. The top section allows the user to choose which of several fields to use for filtering information about resources, which is then displayed in the bottom section.

The following subsections describe the tabs of the *Resource Utilization* report.

##### 4.15.4.1 Resource by Site

The *Resource by Site* tab displays information for a particular resource at particular site. See FIGURE 170. The top section of the *Resource by Site* tab allows the user to choose which of several fields to use for filtering information about resources, which is then displayed in the bottom portion of the tab.

| Choice      | Description  |
|-------------|--|
| Utilization | The total hours that this resource is utilized during the specified date range.  |
| Capacity    | The total efficiency-adjusted standard hours of capacity available from this resource during the specified date range. |
| Load        | The total hours of load that is planned on this resource during the specified date range.                              |
| Available   | The total hours that this resource is planned to be available during the specified date range.                         |

##### 4.15.4.2 Resource by Site Tab Components

The information in the bottom section of the *Resource by Site* tab provides the resource name, dates, and any information chosen from the filtering options.

#### 4.15.4.3 Resource by Skill

The *Resource by Skill* tab displays information for a specified resource, with a specified skill, for a particular site. See FIGURE 171. The top section of the *Resource by Skill* tab allows the user to choose which of several fields to use for filtering information about resources, which is then displayed in the bottom portion of the tab.

| Choice      | Description  |
|-------------|--|
| Utilization | The total hours that this resource is utilized during the specified date range.  |
| Capacity    | The total efficiency-adjusted standard hours of capacity available from this resource during the specified date range. |
| Load        | The total hours of load that is planned on this resource during the specified date range.                              |
| Available   | The total hours that this resource is planned to be available during the specified date range.                         |

FIGURE 171

Resource By Skill Layout

#### 4.15.4.4 Resource by Skill Tab Components

The information in the bottom section of the *Resource by Skill* tab provides the resource name, dates, and any information chosen from the filtering options.

#### 4.15.4.5 Resource by Category

The *Resource by Category* tab displays information for a specified resource, with a specified skill, for a particular site. See FIGURE 172. The top section of the *Resource by Category* tab allows the user to choose which of several fields to use for filtering information about resources, which is then displayed in the bottom portion of the tab.

| Choice      | Description  |
|-------------|--|
| Utilization | The total hours that this resource is utilized during the specified date range.  |
| Capacity    | The total efficiency-adjusted standard hours of capacity available from this resource during the specified date range. |
| Load        | The total hours of load that is planned on this resource during the specified date range.                              |
| Available   | The total hours that this resource is planned to be available during the specified date range.                         |

FIGURE 172

Resource By Category Layout

| Resources | Date      | 96-10-01 | 96-11-01 |
|-----------|-----------|----------|----------|
| Assembler | Capacity  | 745 hr   | 696 hr   |
|           | Load      | 0 hr     | 0 hr     |
|           | Available | 745 hr   | 696 hr   |

#### 4.15.4.6 Resource by Category Tab Components

The information in the bottom section of the *Resource by Category* tab provides the resource name, dates, and any information chosen from the filtering options.

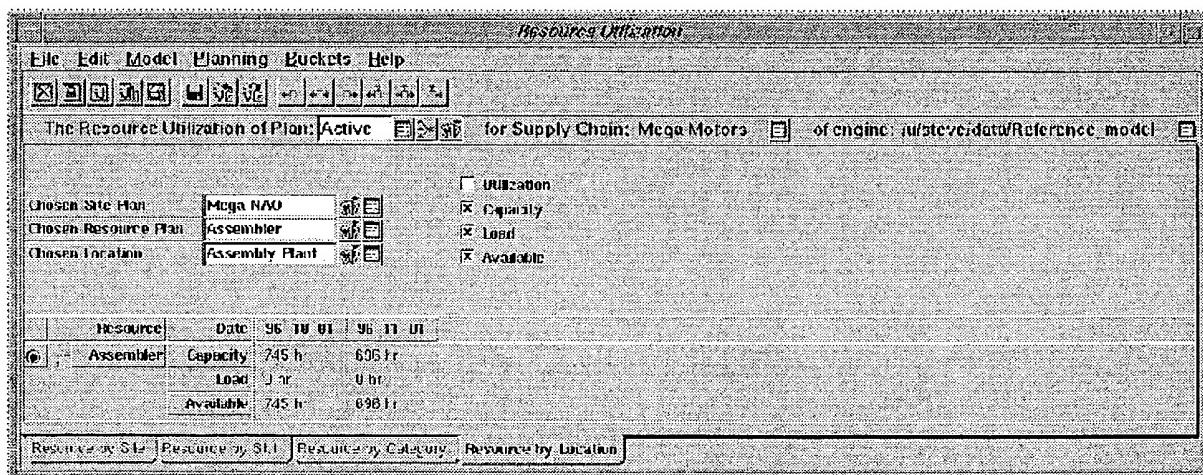
#### 4.15.4.7 Resource by Location

The *Resource by Location* tab displays information for a specified resource, with a specified skill, for a particular site. See FIGURE 173. The top section of the *Resource by Location* tab allows the user to choose which of several fields to use for filtering information about resources, which is then displayed in the bottom portion of the tab.

| Choice      | Description  |
|-------------|--|
| Utilization | The total hours that this resource is utilized during the specified date range.  |
| Capacity    | The total efficiency-adjusted standard hours of capacity available from this resource during the specified date range. |
| Load        | The total hours of load that is planned on this resource during the specified date range.                              |
| Available   | The total hours that this resource is planned to be available during the specified date range.                         |

FIGURE 173

Resource By Location



#### 4.15.4.8 Resource by Location Tab Components

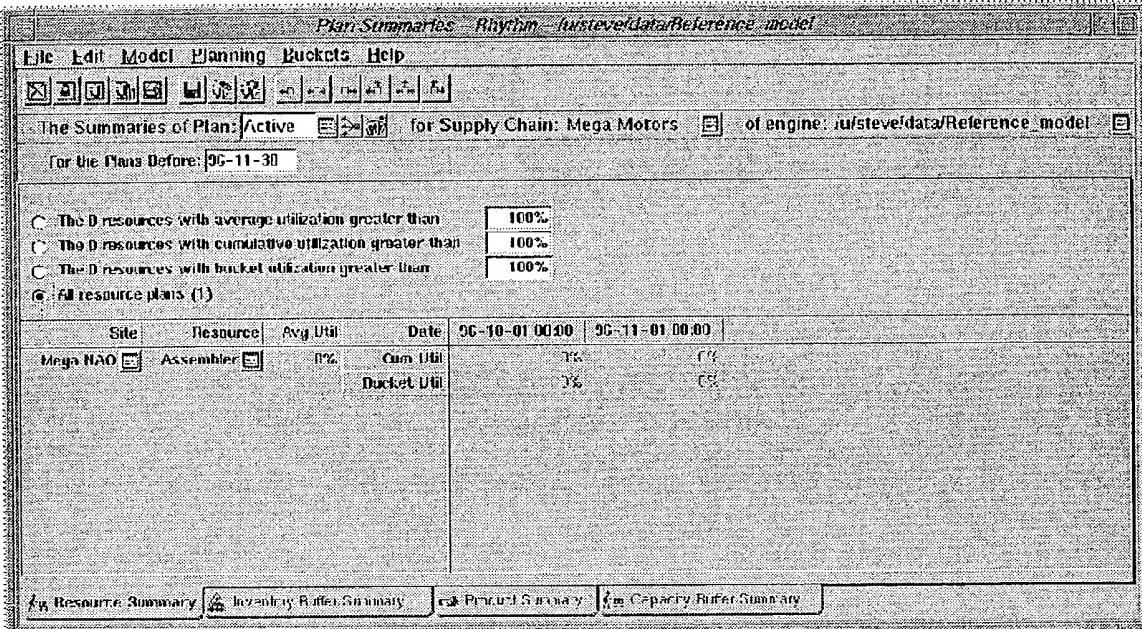
The information in the bottom section of the *Resource by Location* tab provides the resource name, dates, and any information chosen from the filtering options.

## 4.16 Utilization Summary

*Utilization Summary* is an activity for a plan (rather than a standalone report) and displays as the *Resource Summary* tab of the *Plan Summaries* report. The *Resource Summary* tab displays summarized information for all resources within the specified plan. See FIGURE 174.

FIGURE 174

Utilization Summary



The *Utilization Summary* (which displays as the *Resource Summary* tab of the *Problem Summaries* report) displays summarized information for all resources of a particular plan. The top section of the *Resource Summary* tab allows the user to choose which of several fields to use for filtering information that is then displayed in the bottom portion of the tab.

| Choice  | Description  |
|---|--|
| resources with average utilization greater than x%    | The number of resources for the chosen plan that has average utilization greater than x%.    |
| resources with cumulative utilization greater than x% | The number of resources for the chosen plan that has cumulative utilization greater than x%. |
| resources with bucket utilization greater than x%     | The number of resources for the chosen plan that has bucket utilization greater than x%.     |

| Choice             | Description                                |
|--------------------|--|
| All resource plans | All plans for all resources; no filtering. |

#### 4.16.0.1 Utilization (Resource) Summary Tab Components

The information in the bottom section of the *Utilization Summary* tab provides the site name, the resource name, utilization, and dates. From the menu bar, the *Buckets* can be changed to alter the display of information in this report. The *Resource Plan Editor* can be displayed by selecting the *Report* button next to each resource. The *Site Editor* is displayed by selecting the *Report* button next to a site. The information in the *Utilization Summary* tab is as follows:

| Column Name            | Description   |
|------------------------|---|
| Site                   | The particular site being looked at.  |
| Resource               | The item that is being used to add value to the product.                    |
| Average Utilization    | The average utilization of all resources used in this plan.                 |
| Date                   | The date or date range for which the information pertains to.               |
| Cumulative Utilization | The accumulated utilization of all resources used in this plan.             |
| Bucket Utilization     | The utilization of all resources within the specified bucket (time period). |

#### 4.16.1 Viewing Utilization Summary

To view the *Utilization Summary* report, take the following steps::

| Step | Action  |
|------|---|
| 1    | Display the <i>Main Explorer</i> report.  |
| 2    | Select the plan of interest.  |
| 3    | Select <i>FLO Network</i> (in the <i>Plan</i> tree) from the list of <i>Domains</i> .                                       |
| 4    | Select <i>Plan Summaries</i> from the list of <i>Reports/Activities for FLO Networks</i> .                                  |
| 5    | Click <i>Display Report</i> . The <i>Plan Summaries</i> report displays.  |
| 6    | (To view the plan summary for a different plan, select the <i>Choose</i> button and select a plan from the displayed list.) |



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